

**The Effect of Video Peer-Modelling and Video Self-Modelling on the Adaptive  
Behaviour of Students with Autism Spectrum Disorder  
Using a Single-Subject Research Design**

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A thesis submitted in partial fulfilment of the requirements for the  
Degree of Master of Arts in Psychology

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**List of Abbreviations**

ABAS-II	Adaptive Behaviour Assessment System, Second Edition
ASD	Autism Spectrum Disorder
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5 <sup>th</sup> Edition
FBA	Functional Behaviour Assessment
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10 <sup>th</sup> Revision
IQ	Intelligence Quotient
SIA	Special Interest Area
VM	Video Modelling
VPM	Video Peer-Modelling
VSM	Video Self-Modelling

### **Abstract**

In a move towards an inclusive education system, the Special Education 2000 policy permitted the inclusion of students with autism spectrum disorder (ASD) into mainstream New Zealand schools. It is well established that these students encounter difficulties with communication, social interactions and repetitive behaviours. The acquisition and maintenance of new skills can present numerous challenges for both the individual and their teachers. It is therefore fundamentally important that research evaluates methods for improving adaptive behaviour in students with ASD, and that these methods are acceptable to the classroom teacher. The current study employed a multiple baseline across behaviours, nested in a single-subject, yoked participants design. This was used to examine the effects of video peer-modelling (VPM) and video self-modelling (VSM) on the adaptive behaviour of six students with ASD, aged 9 to 16. Overall, the results of the current study provided support for the efficacy of VPM and VSM in educational contexts for a diverse group of participants. As participant's functional or social skills increased, study findings showed their challenging behaviour simultaneously decreased. These skills were maintained over time and all teachers indicated this was socially valid intervention they would consider using in the future.

## The Effect of Video Peer-Modelling and Video Self-Modelling on the Adaptive Behaviour of Students with Autism Spectrum Disorder Using a Single-Subject Research Design

### **Autism Spectrum Disorder**

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that is characterised by difficulties in communication, social interactions and repetitive behaviours (American Psychiatric Association, 2013). The defining characteristics of ASD include underlying communication deficits, such as responding inappropriately in conversations, misreading nonverbal interactions, or having difficulty building friendships appropriate to their age. Furthermore, individuals may be overly dependent on routines, highly sensitive to changes in their environment, or intensely focussed on inappropriate items (American Psychiatric Association, 2013). Children and adolescents with ASD present a unique set of challenges including attention and communication difficulties, repetitive behaviour, resistance to environmental changes and unusual sensory experiences (Delano, 2007). In addition, some individuals with ASD may demonstrate elevated levels of problem behaviours that require positive behaviour support plans. Overall, ASD has a profound impact on family functioning and parental stress, and can also limit the individuals' access to mainstream education (Ayres & Langone, 2005; Cihak & Bowlin, 2009; Spreckley & Boyd, 2009).

Under the latest DSM-5 (American Psychiatric Association, 2013), for individuals to be diagnosed with ASD, they must show symptoms from early childhood (e.g., not responding to their name or repetitive behaviours such as hand flapping). The aim of this criteria change was to encourage earlier diagnosis of ASD and subsequent early interventions (American Psychiatric Association, 2013). According to the ICD-10 criteria for childhood Autism (World Health Organization, 1993), impairment must be evident before 3 years of age in at least one of three areas; language, social attachments and interactions, and functional or symbolic play. Furthermore, the child must also have at least six symptoms from a range of

areas under three categories; impairment in social interactions, abnormalities in communication, and restricted, repetitive, and stereotyped patterns of behaviour, interests, and activities. Finally, the symptoms must not be attributable to other pervasive developmental disorders.

ASD is present across all nationalities, races and social classes (Autism New Zealand Inc., 2018). The number of children with ASD has increased rapidly in recent years. The Centers for Disease Control and Prevention (2018) reports the incidence has jumped from 1:5000 children in 1975 to 1:59 children today. According to Autism New Zealand Inc. (2018), 1 in 66 people in New Zealand have an autism spectrum disorder. This includes people who are higher functioning and do not necessarily need extra assistance, but will benefit from early recognition and acceptance of their needs and unique set of skills. Four times more boys than girls are affected by ASD level 2 and 3 ("classic" autism) and nine times as many boys than girls are affected by ASD level 1 (Asperger's expression) (Autism New Zealand Inc., 2018). While ASD is a lifelong disability, early diagnosis and intervention such as special education and structured support programmes can help the individual to capitalise on their skills and achieve full potential in adulthood (Autism New Zealand Inc., 2018).

Individuals with ASD have strengths in processing visual as opposed to auditory stimuli (McCoy & Hermansen, 2007). Hodgdon (1995) notes that visual material is non-transient, meaning the information stays in place as long as necessary for an individual to process it. Hodgdon also notes there is evidence to suggest individuals with auditory processing problems have difficulty processing rapidly changing acoustic information. This means that normal speech that is characterised by short cues and rapid rates often presents a challenge for these individuals. According to Hodgdon, these students find it difficult to smoothly and accurately control the shifting and re-establishing of attention (a skill vital

for social interaction), and also have difficulty attending to foreground sounds and blocking out background noises. Consequently, students perceive all auditory information at equal intensity. Their difficulty in selective listening results in the individual's sound reception being all on or all off, and thus, it is an inefficient system. Thus, the visual message, e.g., watching a video, better accommodates the functioning style of students with autism.

Conversely, the stability of the visual message allows sufficient time for the student to disengage, shift attention, and re-engage. It also allows the individual to focus on it long enough, or return to it as needed, to establish memory. This strength in visual processing provides the basis for a number of interventions to support children and adults with ASD. Bryan and Gast (2000) employed picture activity schedules to teach young students with autism on-task and on-schedule behaviour. All four students met criterion levels of literacy engagement and maintained these skills when the picture book activity was available; however, their performance dropped when the picture book activity was not available. The authors concluded that visual activity schedules were an effective method for promoting independent functioning of students with autism in their normal environments.

Individuals with ASD often develop special interest areas (SIA's) where they dedicate an immense amount of time to this favourite subject. In some cases, the individual may become exceptionally knowledgeable and achieve high levels of performance in this area. In a study of children and youth with Asperger syndrome, Winter-Messiers (2007) found a strong positive relationship between children's and adolescents' special interests and improvements in social, communication, emotional, sensory and fine motor skills. This suggests that incorporating SIA's into interventions or using them as a reward for desirable behaviour could be effective when teaching children with ASD new adaptive skills. As such, finding instructional strategies that incorporate the strengths of visual discrimination and

SIA's to assist individuals in learning new skills is an important area of research (Ayres & Langone, 2005).

### **Typical Adaptive Behaviour Skills**

Adaptive behaviour refers to the effectiveness and degree with which an individual meets cultural standards of personal independence and social responsibilities (Grossman, 1977). Throughout history, adaptive behaviour has been of paramount importance to human kind. For example, the ancient Greeks recognised the ability for one to care for themselves and reliably engage in community life as an indication of intelligence and maturity (Berg, Clarke, & Clarke, 1985). Today, adaptive behaviour remains a crucial part of an individual's daily functioning. Adaptive behaviour skills enable individuals to meet personal needs, and deal with the demands of one's natural and social environments. This includes the skills needed to care for one's personal health and safety, dress and bathe, communicate, display socially appropriate behaviours and academic skills, effectively engage in recreation and work, and to engage in community life (Ditterline, Banner, Oakland, & Becton, 2008).

### **Adaptive Behaviour and Autism Spectrum Disorder**

Within the increasing number of children diagnosed with ASD, the fastest growing sub-group are those without comorbid intellectual disability (Baio, 2014). While there is an expectation of improved outcomes for this group due to higher IQ, data does not support this optimism (Pugliese et al., 2016). As a result, recent research has focused on understanding real-world adaptive behaviours and how they relate to functional outcomes for individuals with ASD. Adaptive behaviour includes four domains; (a) Communication, (b) Daily Living Skills/Self Help Skills, (c) Socialization/Social Functioning/Interpersonal Skills, and (d) Motor Skills (Carter et al., 1998). Research demonstrates that independent living status is more dependent on functional adaptive behaviour, for example daily-living skills such as cooking and personal hygiene, than their cognitive ability or ASD symptomology. Therefore,

understanding the factors that contribute to these skills and how they develop for individuals with ASD is fundamental in helping these young people achieve optimal outcomes (Farley et al., 2009; Kanne et al., 2011).

In a longitudinal study of 64 children with ASD without intellectual disability, Pugliese et al. (2016) tracked adaptive behaviour (communication, daily-living skills, socialisation) into young adulthood and investigated how behavioural manifestation of executive functioning is associated with future adaptive behaviour. Results showed that real-world executive functioning skills, such as coping with disagreements or motivating oneself to do chores around the home, are important for socialisation and daily-living skills. In particular, inhibition, shifting (the ability to intentionally shift thoughts and actions in response to contextual changes) and monitoring skills appear to predict future adaptive behaviour scores on the Vineland Adaptive Behaviour Scales (Sparrow, Balla, & Cicchetti, 2006). Therefore, targeting adaptive skills (and the executive functioning skills that contribute to them) in individuals with ASD is vital for the development of everyday functional behaviour and social skills.

### **Functional Behaviour and Social Skills**

Research on the adaptive behaviour and skills of children with ASD largely reveals a pattern of social skills deficits. Ditterline et al. (2008) assessed the profiles of twenty-four students with autism, aged 4 to 14 years using the Adaptive Behaviour Assessment System - Second Edition (ABAS-II). The authors found that the general adaptive behaviours and skills included in the conceptual, social and practical domains were generally extremely low. In particular, these students showed prominent deficits in communication followed by community engagement, health and safety, self-direction and social functioning. Individuals with ASD encounter socialisation problems as a result of their difficulty with interpersonal communication, their ability to be flexible, their tendencies for literal interpretation, their

propensity to be disorganised, and their difficulty to generalise or transfer social skills to novel circumstances (Terpstra, Higgins, & Pierce, 2002).

Typically developing individuals usually learn the “hidden social curriculum” of how to behave around different people and what behaviours to demonstrate or avoid so as not to appear different or upset others. Most individuals with ASD do not have an understanding of the hidden social curriculum due to their neurological differences and therefore behave in unexpected ways, often appearing to have no behavioural inhibitions (Berkell Zager, Cihak, & Stone-MacDonald, 2017). For example, a typically developing adolescent has likely learnt to take turns while playing a game with another student, even if the next move will result in a ‘win’ for their peer. However, an individual with ASD may take an inappropriate turn in order to gain the ‘win’. It may also be difficult for the individual with ASD to recognise that continually telling others how to play the game may be perceived as impolite or overbearing. These misperceptions may result in those with ASD being subject to unexpected discipline or rejection from others.

One of the most salient concerns of parents of children with ASD is whether they will live a safe, productive and independent life (Shipley-Benamou, Lutzker, & Taubman, 2002). Research has shown that those who acquire independence early in life have greater potential to thrive in domestic and vocational settings (K. Pierce, Glad, & Schreibman, 1997). However, for students who engage in inappropriate behaviours that are difficult to manage and disrupt the class, access to the mainstream education classroom is limited. Furthermore, inappropriate social behaviour is one of the main reasons students with disabilities are educated outside mainstream classrooms (Cihak, Fahrenkrog, Ayres, & Smith, 2010).

Typically developing individuals learn many of these basic social-communication and functional behaviours through social learning and/or instruction. For example, a typically developing adolescent may be given a specific instruction such as “please collect the mail”



and based on previous knowledge and experience, carry out the task (or the majority of the task) independently. However, an adolescent with ASD may have little cognitive understanding of the task and is therefore unable to independently perform the discrete component skills within it. Students who demonstrate social and functional challenges may have fewer friends and be involved in less activities (Barkley, Anastopoulos, Guevremont, & Fletcher, 1991; Heflin & Alaimo, 2007). They may also have poor school performance and low self-esteem in adulthood (Heflin & Alaimo, 2007). These students are often disciplined for their inappropriate social behaviour and rejected by their peers, which can lead to anxiety and depression (Bellini, 2006). Children with ASD have social and psychological needs; whilst they desire close friendships and to connect with others, it is often the case that their adaptive behaviour difficulties lead to problems with establishing and maintaining friendships (White, Scahill, Klin, Koenig, & Volkmar, 2007). Hence, effective interventions that target children with ASD's functional and social behaviour are suitable for use in the school environment.

### **Current Treatments**

A large body of research has demonstrated that providing children with appropriately targeted learning supports early in life promotes significant development in language, behaviour, social skills and eventual education (Berkell Zager et al., 2017). Behavioural approaches that are focussed around skill building and managing problem behaviours are the most successful interventions for individuals with autism (Barlow & Durand, 2014). Behavioural intervention planning involves determining the variables identified through a Functional Behaviour Assessment (FBA) as either occurring as antecedents or reinforcing consequences for challenging behaviour (Berkell Zager et al., 2017). Consequence based strategies incorporate reinforcement and punishment procedures. Positive reinforcement involves the introduction or increase of a stimulus following a desirable behaviour. Negative

reinforcement occurs when the target behaviour is followed by the removal or reduction of an aversive stimulus, and as a result, the behaviour occurs more often in the future (e.g., putting ear plugs in to escape loud noise). In both instances, these can only be considered reinforcement when the rate of the behaviour of interest increases in the future. Differential reinforcement is a procedure that involves reinforcing one behaviour while withholding reinforcement for another behaviour. Antecedent-based strategies are used to decrease interfering behaviour and increase engagement by modifying the environment. The goal is to identify the physical, social and physiological conditions that are reinforcing the challenging behaviour and then modify the environment or activity so that the conditions no longer elicit the interfering behaviour. Following are examples of antecedent-based strategies that are particularly useful for students with ASD.

Visual schedules use a series of written words, objects, photographs, line drawings or symbols to communicate a specific activity or series of steps in an activity. This type of support is used to accommodate the individuals need for predictability by making it clear when activities occur. Visual schedules can present a wide range of information including daily schedules, activities to complete during a class period or a series of steps to complete within a task (Berkell Zager et al., 2017). Individuals with ASD encounter difficulty coping with unstructured time and benefit from increased structure in their lives. Visual schedules have been shown to reduce anxiety and inappropriate behaviours, and increase the individual's flexibility by teaching them new skills and broadening their interests (Mesibov, Shea, & Schopler, 2005). A number of studies have demonstrated the positive effects of visual schedules in learners with ASD (Carlile, Reeve, Reeve, & DeBar, 2013; Lequia, MacHalicek, & Rispoli, 2012; Machalicek et al., 2009; J. M. Pierce, Spriggs, Gast, & Luscre, 2013). Following are examples of evidence-based visual schedules commonly used to teach daily-living and social skills.

Social narratives are pictorial or written ‘stories’ that depict social situations and socially appropriate responses or behaviours to help the individual with ASD acquire and use appropriate social skills. One popular form of social narrative is social scripts (Berkell Zager et al., 2017). These are written or audio material that provide information and instruction for appropriate social behaviour. This intervention has produced positive results in various studies with learners across a diverse age range (D. Parker & Kamps, 2011; Wichnick, Vener, Pyrtek, & Poulson, 2010). In many studies, these prompts are systematically faded out with the students continuing their scripted and unscripted phrases. Another type of social narrative intervention is video modelling (VM). VM combines the principle of modelling and visual learning to teach the individual new skills (Berkell Zager et al., 2017). It has been used successfully across a diverse range of individuals with autism and many different skills (e.g., pretend play, purchasing, cooking, social-communication, personal cares, eye contact). This intervention can be implemented with little to no prompting by support persons, thereby facilitating the individual’s independence (Campbell, Morgan, Barnett, & Spreat, 2015).

### **Modelling and Observational Learning**

VM is based on Bandura’s (1969) theory of social learning employing observation to support learning. Bandura describes how observing models provides greater opportunities to teach children with ASD new behaviours and enhance stimulus generalisation (Ayres & Langone, 2005). There are four essential conditions for learning by observation to occur; (1) attention to the demonstrated skill/behaviour, (2) retention in memory, (3) reproduction of the behaviour when required, and (4) motivation to enact the previously observed skill/behaviour (Bandura, 1969; Dowrick, 2012a). Bandura (1977) claims that children often develop behaviours by observing others perform those skills, rather than from their own personal experiences. Further, observers will imitate others behaviours, regardless of reinforcement, and these behaviours generalise to other settings. Imitation is a multifaceted type of social

learning which allows the individual to profit from modelling the behaviour of a skilled performer (Dowrick, 2012b). However, the ability to discriminate who and what to model is a sophisticated skill, and requires a frame-of-reference (understanding the context and viewpoint) that guides the outcome of the model and viewer. While these skills can be difficult for an individual with ASD, visual supports can aid location of the appropriate frame-of-reference (McCoy & Hermansen, 2007).

### **Video Modelling**

VM is a relatively new genre of behavioural intervention that utilises the power of observational learning, and has empirically been shown to suit the educational needs of children with autism (Delano, 2007). VM involves recording targeted behaviours, and then presenting the video to the individual with the aim of increasing their ability to memorise, imitate, and generalise these behaviours (Hitchcock, Dowrick, & Prater, 2003). These targeted videos can be developed using models (adults or peers) engaging in the behaviour being taught, or point-of-view videoing of the targeted skill. 'Point-of-view' refers to the visual image that would be seen if the participant was engaged in adaptive behaviour (McCoy & Hermansen, 2007). McCoy and Hermansen (2007) note there is still uncertainty regarding who is the most appropriate and meaningful model for different types of behaviour. However, based on their review, the authors concluded that the models with the most significant impact seem to be self and peers. This highlights the feasibility of using this method in the school environment to include students with ASD.

The popularity of VM is partially due to teachers' needs to find effective strategies to meet the instructional characteristics of children with autism (McCoy & Hermansen, 2007). According to Bellini and Akullian (2007), the effectiveness of VM interventions can be somewhat attributed to their integration of an effective learning modality for individuals with ASD (i.e., visually cued instruction), and a well-researched intervention technique

(modelling). Individuals with ASD have symptomology that includes exhibiting over-selective attention or attending to irrelevant details in the environment (Happé & Frith, 1991; Koning & Magill-Evans, 2001). However, VM enables irrelevant elements of the modelled skill or behaviour to be removed from the video, allowing the subject to focus on the essential components of the targeted behaviour (Bellini & Akullian, 2007). Furthermore, VM interventions can be implemented with little to no prompting from adult supports, increasing the individual's independence (Campbell et al., 2015). In comparison to live modelling, VM results in faster rates of acquisition, greater generalisation and requires less resources (McCoy & Hermansen, 2007). Past research suggests that VM interventions are effective intervention strategies for addressing social-communicative skills (teaching social skills and play behaviours), functional living skills (promoting skill acquisition and facilitating the generalisation of self-help skills), and challenging behaviour (e.g., reduction of problem behaviour and off-task behaviour) in individuals with ASD (Carter et al., 1998).

### **Literature Review: Video Peer-Modelling**

To identify existing research that explored the use of VM, the following review was conducted. This review involved a systematic analysis of studies that focused on the use of VM with peers (hereafter referred to as video peer-modelling (VPM)) to improve adaptive behaviour or decrease challenging behaviour in children with ASD. Studies that included adult or point-of-view modelling were excluded from the search as these techniques were not utilised in the current study. To identify articles for this review, a search was conducted using the following databases: PsycINFO, PsycARTICLES, PubMed, PsycLit, and Google Scholar. A combination of terms were used in the database searches; specifically: “video”, “model\*”, “autis\*”, “problem\*”, “adaptive”, “behavior”, “behaviour”, “compliance”, “comply”, “child\*”, “student”, “adolescent”, “intervention”, “school”, “academic”, “education\*”. The search was restricted to English language peer-reviewed studies published between 2001 and

2018. This timeframe was chosen to include only the most up-to-date research and limit overlap with previous reviews that are included in this thesis. Articles were included in this review if VPM was the only intervention manipulation (without other intervention modalities), and the intervention was conducted in an educational setting with students between the ages of 3 to 19 years old. Table 1 provides an overview of studies that met this criteria.

Table 1

*Video Peer-Modelling Interventions*

Authors	Study Design	Participants	Peer model/s	Target Adaptive Behaviour & Setting	Intervention Procedures	Findings	G <sup>1</sup> , M <sup>2</sup> , F <sup>3</sup> , SV <sup>4</sup>	Limitations	Strengths
Nikopoulos and Keenan (2004)	Multiple baseline across subjects	3 males; 7 to 9 years old	1 typically developing peer (gender and age not specified)	Social initiation & reciprocal play	Three separate videos with adult and peer engaging in social interactions	Enhanced social initiation and reciprocal play skills	G <sup>+</sup> <sup>6</sup> across toys	SV not measured	Behaviours' needed to occur three times consecutively before moving on to next video
		Moderate to high fxn <sup>5</sup>		Room within clinic	Social initiations had to be made within 25 seconds of being transferred to a room with toys (in three consecutive sessions) to move onto next video		M <sup>+</sup> (after 1 month and 3 month period) F (IOA <sup>7</sup> 98%)		
Nikopoulos and Keenan (2007)	Multiple baseline across subjects	3 males and 1 female; 6 and 7 years old	1 peer (gender not specified); 10 years old with learning difficulties and average social interaction skills	Complex social sequences	Four separate videos with adult and peer engaging in social interactions	Enhanced social initiation skills, reciprocal play engagement and imitation of responding of sequence behaviours for all participants	G <sup>+</sup> across peers	Room only semi-naturalistic	No set number of sessions, each child's behaviour determined when he/she ready for next condition  Children not required to have any prerequisite skills
		Low and moderate to high fxn		Semi-naturalistic room of the school	Social initiations had to be made within 10 seconds of watching video to move onto next video		M <sup>+</sup> (after 1 and 2 month period) F (IOA 95%) SV <sup>+</sup>	Same environment and materials used across conditions  No G across settings measured	
Reagon, Higbee, and Endicott (2006)	Quasi-experimental AB design	1 male; 4 years old  Moderate to high fxn	3 typically developing peers (gender and age not specified)	Pretend play skills  University based preschool classroom common space	Four separate videos with sibling and peer engaging in pretend play  Response scored if correct action made within 5 seconds of his sibling's corresponding action or verbal statement	Successful engagement with sibling in the four scenarios during intervention as well as generalisation probes conducted in their home on the same day	G <sup>+</sup> across locations and siblings	Single participant  Maintenance data was collected on the same day as intervention  Sibling play partner may increase participants likelihood of engaging in behaviours modelled by the peer	Tested generalisation in home setting and with a different sibling

Table 1

*Video Peer-Modelling Interventions Continued*

Authors	Study Design	Participants	Peer model/s	Target Adaptive Behaviour & Setting	Intervention Procedures	Findings	G, M, F, SV	Limitations	Strengths
Sherer et al. (2001)	Multiple baseline across subjects and alternating treatments	5 males; 3 to 11 years  Fxn level not specified	6 typically developing peers (gender not specified); 6 to 8 years	Conversation skills  Home or research laboratory	One video with 8 questions and responses between therapist and peer model  Correct conversation defined as child's correct response to question within 5 seconds and correct return question	Results variable between subjects	M+ (after 2 month period)  IOA+ (99%)	No G or SV  Also assessed self-modelling which may have facilitated in learning	Separate questions compiled for each child regarding their home and school life
Morlock, Reynolds, Fisher, and Comer (2015)	Multiple baseline across subjects	3 males; 17-18 years  Moderate to high fxn	Peers not specified	Word recognition and pronunciation  Specialised school for children with ASD <sup>9</sup>	Each participant viewed a number of separate videos to teach them to identify and pronounce 5 separate words  Data recording not specified	VM <sup>8</sup> effective in facilitating word recognition and pronunciation	F (IOA 99%)  SV+  FU <sup>10</sup> + (after 3 months)	No G  SV assessed responses from teachers and students only	Videos tailored to each participants learning requirements
Nikopoulos, Canavan, and Nikopoulou-Smyrni (2009)	Multiple baseline across subjects	2 males and 1 female; 7 to 9 years  Low to moderate fxn	1 unfamiliar typically developing peer (gender and age not specified)	Instructional stimulus control  One classroom within the school	One video with peer playing with toy, experimenter gives verbal instruction "play is finished", model puts the toy away  The toy had to be put away within 5 seconds of verbal instruction on five consecutive sessions before moving on to generalisation across toys and finally generalisation across subjects	Procedure effective for children with lower baseline levels of disruptive behaviours and more developed imitation skills	G+ across stimuli and subjects  FU+ (after 1 month)  F (IOA 98%)	No functional behaviour assessment  No F or SV	Demonstrated that procedure effective for children with lower baseline levels of disruptive behaviours and more developed imitation skills

*Note.* 1: G = Generalisation, 2: M = Maintenance, 3: F = Fidelity, 4: SV = Social Validity, 5: fxn = Functioning Level, 6: + = Positive Result, 7: IOA = Interobserver Agreement, 8: VM = Video Modelling, 9: ASD = Autism Spectrum Disorder, 10: FU = Follow-Up



**Synthesis of study findings that employed video-peer modelling.**

***Social-communicative Skills & VPM.*** Four studies examined social-communicative skills across varied settings with mixed results (Nikopoulos & Keenan, 2004; Nikopoulos & Keenan, 2007; Reagon et al., 2006; Sherer et al., 2001). One study found that children diagnosed with severe autism required additional practice to successfully imitate skills than those with mild to moderate autism. The same study reported that when a child successfully engaged in imitative responses, competing behaviours such as isolated object engagement reduced, and reciprocal play increased. This suggests that learning new skills may aid in decreasing undesirable behaviours.

***Functional Skills & VPM.*** One study assessing word recognition and pronunciation (Morlock et al., 2015) found that participants improved and maintained accuracy scores for both target behaviours. Further, their teachers indicated this was a socially valid intervention. Nevertheless, one participant did show inconsistent results; the authors suggesting that a custom made video of a familiar peer and setting may have been more effective than the commercial video for this individual.

***Challenging Behaviour & VPM.*** One study (Nikopoulos et al., 2009) created a video where an experimenter gives the verbal instruction “play is finished” and a peer model puts a toy away. Two participants showed a decrease in disruptive behaviour and developed a greater number of imitation skills that generalised across stimuli and subjects.

***Critique.*** VPM has been common practice in educational settings (McCoy & Hermansen, 2007); however, the literature contains conflicting evidence. Jones and Schwartz (2004) suggest VPM is only successful with adult intervention such as live training, computer instruction, visual cues and reinforcement. Consequently, some researchers suggest that unless the peer model is to be used on multiple occasions to teach different students, this strategy may require too much teachers’ time. Alternatively, the above research suggests

VPM is a viable sole intervention. Importantly, Sherer et al. (2001) argues it is more efficient to video a typically developing peer who already has the skills than a child who has not yet acquired the skills. Nevertheless, the efficacy of VPM as a sole intervention modality has been assessed in few studies, with only one study utilising adolescent participants (Morlock et al., 2015). Further research is needed to determine whether VPM is an effective intervention to teach new skills and reduce challenging behaviour in high school-aged learners.

Overall, adherence to evidence-based practices for single-case research was varied across studies. The majority of studies included measures of generalisation, maintenance or follow-up, and fidelity, while only two studies measured social validity. Including measures of social validity to assess the acceptability of treatment to participants, parents/caregivers and teachers is important. Measures of procedural and treatment fidelity, alongside generalisation and maintenance measures, are critical in determining the efficacy of VPM interventions. Further research is required to understand when, where and how to use VPM with matched peers and siblings as models for children and adolescents with ASD (Fragale, 2014; McCoy & Hermansen, 2007).

### **Video Self-Modelling**

Video self-modelling (VSM) was developed so that individuals could view themselves in situations where they are performing at a greater level than they can typically function (Buggey, 2005). VSM studies began to emerge in the 1970s and were presented as a special case of peer/other modelling due to a lack of appropriate peer models (Dowrick, 2012a). VSM involves filming the individual and editing the footage to display only positive depictions of the person accurately and independently performing the targeted behaviour (Hitchcock et al., 2003). While past research has included prompts, music, or other types of audio, Dowrick (2012a) argues that learning occurs from observing the desired behaviour.

VSM has been used successfully to teach desirable behaviours and reduce undesirable behaviours across a range of ages, abilities and situations. Positive results have also been observed for treating depression, stuttering, selective mutism, attention disorders, behaviour disorders, aggressive behaviours and improving sports performance (Buggey, 2005; Dowrick, 2012a). The ability to discriminate who and what to model is a sophisticated skill (Dowrick, 2012a; McCoy & Hermansen, 2007). Dowrick (2012a) proposes that a mechanism for selection must operate when an individual has various potential responses to a given situation. He notes that a possible candidate for this is self-efficacy, reporting that rapid behaviour change without physical practice (such as that which occurs in the feedforward process of VM) suggests dramatic changes in self-efficacy. Certainly in the case of VSM, watching visual evidence that he/she can accomplish a specific task may serve to increase self-efficacy (Buggey, Hoopes, Sherberger, & Williams, 2011).

According to past research, VSM is the most effective form of VM for individuals with ASD (Buggey et al., 2011; Dowrick, 2012a; McCoy & Hermansen, 2007). Researchers report that children with ASD are more likely to engage with videos of the self and virtual environments rather than peers and regular environments (Mineo, Ziegler, Gill, & Salkin, 2009). This may be due to individuals with ASD not demonstrating the usual mirror system responses when viewing peers (Oberman et al., 2005). Ramachandran and Oberman (2006) propose that mirror neuron functioning may be dormant instead of completely lost and can be repaired or strengthened by the self-modelling process.

### **Positive Self-Review and Feedforward.**

Dowrick (2012a) describes two distinctive forms of VSM that have conceptual and procedural distinctions; positive self-review and feedforward. Positive self-review involves the participant being videotaped over time and selecting the 'best' of typical behaviours when engaging in a challenging task. When producing a video, planning out the exact behaviours to

occur, or scanning through hours of footage is necessary to find good examples. Positive self-review is effective in improving consistency in new skills and is a popular method among sports people. Feedforward however, involves creating an image of the individual achieving a goal that is beyond their current ability (Dowrick, 2012b). These videos are created by filming and editing components of the required behaviour that are manageable for the individual, and stitching these together to create a video showing the individual competently engaging in the skill (Hitchcock et al., 2003). According to Dowrick (2012a, p. 217), the latter process results in “rapid changes of behaviour and improvements of performance”. In a summary of 10 VSM studies from 1990-2006, all participants were successful in areas where they had not been successful in the past, despite alternative intervention methods previously being used. However, it is important to note that in order to view themselves having success in the target area (in the future), all the component behaviours must be within their skill set (Dowrick, 2012a).

### **Literature Review: Video Self-Modelling**

To identify existing research that explored the use of VSM, the current review was conducted. This review involved a systematic analysis of studies that employed VSM with the aim of improving adaptive behaviours and/or decreasing challenging behaviour in children with ASD. To identify studies for this review, a search was conducted using the following databases: PsycINFO, PsycARTICLES, PubMed, PsycLit, and Google Scholar. A combination of terms were used in the database searches; specifically: “video”, “model\*”, “autis\*”, “problem\*”, “behavior”, “behaviour”, “compliance”, “comply”, “child\*”, “student”, “intervention”, “school”, “academic”, education\*”. The search was restricted to English language peer-reviewed studies published between 2008 and 2018. This timeframe was chosen to include only the most up-to-date research and to limit overlap with previous reviews that are included in this thesis. Articles were included in this review if VSM was the

only intervention manipulation (without other intervention modalities), and the intervention was conducted in an educational setting with students between 3 to 19 years old. Table 2 provides an overview of studies that met this criteria. Findings from two previous reviews (Bellini & Akullian, 2007; Delano, 2007) were incorporated into the summaries (but not the tables) under the section labelled 'Previous Reviews'.

Table 2

*Video Self-Modelling Interventions in Educational Settings*

Authors	Study Design	Participants	Target Adaptive Behaviour & Setting	Intervention Procedures	Findings	G <sup>1</sup> , M <sup>2</sup> , F <sup>3</sup> SV <sup>4</sup>	Limitations	Strengths
Boudreau and Harvey (2013)	Multiple baseline across subjects	3 males; 4-7 years  Fxn <sup>5</sup> not specified	Social initiations  Within the child's school	6-7 minute video, no other details specified  Social initiations recorded on a partial interval recording system during first 10 minutes after video watched	Increased levels of play initiations, similar to that of typically developing peers	SV <sup>+</sup> <sup>6</sup>	No M, G or F measures  IOA <sup>7</sup> (80%), below recommended minimum of 85%  Videos varied in length and number of clips	Authors noted that evidence of one child attending to the video coincided with increases in initiations, while the other two "tacted" behaviour immediately, and subsequently increased initiations immediately
Buggey et al. (2011)	Multiple baseline across subjects	2 males and 2 females; 3-4 years  Low to moderate fxn	Social initiations in playground  Inclusive preschool	2.5-3.5 minute video shown daily for 8-10 days  Social initiation was divided into physical and vocal initiations  Engagement defined as attending to peer or peers activity for more than 5 seconds and vocal initiation defined as vocalisations directed at the peer	Two children exhibited major treatment effects, one had questionable results and one had no change	M+  SV+  F (IOA 90%)	No G measure	Assessed filming effects on baseline behavior  Self-recognition test before study  Children were monitored while watching videos
Buggey (2012)	Multiple baseline across subjects	3 males; 3-4 years  Low fxn, 1 participant unspecified	Social initiations in playground  Private inclusive preschool	2-3min video shown once daily over 5 days, and 5 days at follow-up  Social initiation was divided into physical and vocal initiations  Engagement defined as attending to peer or peers activity for more than 5s and vocal initiation defined as vocalisations directed at the peer	No changes in behaviour noted	M+  F (IOA 92.5%)  SV+	No G measure  Assessment instruments may not have important aspects of the child's skills or the nature of their ASD <sup>8</sup>  Fidelity of treatment was recorded by teachers, not by observation	Assessed filming effects on baseline behavior  Self-recognition test before study  Children were monitored while watching videos

Table 2

*Video Self-Modelling Interventions in Educational Settings Continued*

Authors	Study Design	Participants	Target Adaptive Behaviour & Setting	Intervention Procedures	Findings	G, M, F, SV	Limitations	Strengths
Williamson, Casey, Robertson, and Buggey (2013)	Multiple baseline across subjects	2 males, 1 female; 11-14 years  Fxn <sup>5</sup> not specified	Interpersonal greetings  Classroom	Video length not specified, shown once per day  Duration data collection was used to record participants initiation in morning and/or lunch/table greetings, greetings shown on video marked on grid as 'y' (positive) or 'n' (negative)	Only one of three participants showed an increase in self-initiated greetings	F (IOA 96%)  M+	No G, F or SV  Prior exposure to VSM <sup>9</sup> methods	Demonstrated that participant with all 4 prerequisite skills benefited most from VSM intervention
Campbell et al. (2015)	Multiple baseline across subjects	1 males and 1 female; 17-19 years  Fxn not specified, all participants had comorbid disorders	Hand washing in classroom  Private school	Video not described  13-step task analysis of hand washing, each step marked as independent or not independent	Small increases in independent hand washing skills	Nil	No G, M, F or SV measures  IOA only collected for 15% of observations  Participants were already experienced with hand washing  Study lasted one month only	Utilised step-wise task analysis to create videos and record data
Burton, Anderson, Prater, and Dyches (2013)	Multiple baseline across subjects	4 males; 13-15 years  Fxn not specified, all participants had comorbid intellectual disability	Functional math skills	3-5min video shown twice daily, 4 days a week. Note, students could pause, fast-forward or rewind video while solving problems  Task analysis for each math problem, each step marked as completed or not completed	Functional relationship between VSM and accuracy of math calculation for all four participants	G+  M+ F (IOA 100%)  SV+	Author assumed dual role of classroom teacher and researcher  Video could be used while solving math problems, may not be realistic to do in real-world settings	Fading procedure (use of video) used throughout M to conclude with a follow-up where the video was not present

Table 2

*Video Self-Modelling Interventions in Educational Settings Continued*

Authors	Study Design	Participants	Target Adaptive Behaviour & Setting	Intervention Procedures	Findings	G, M, F, SV	Limitations	Strengths
Hart and Whalon (2012)	ABAB reversal design	1 male; 16 years  Moderate fxn, also diagnosed with hearing loss and speech and language impairment	Academic responding  Public high school resource room	1 minute video shown at least three times per day, number of days not specified  Recorded unprompted correct response, prompted correct response, incorrect response and no response	Increased correct, unprompted academic responding with intervention, decrease when withdrawn and increase when re-introduced	F (IOA 94%)  SV+	No G or M	Prior to intervention, teacher was regarding competing behaviours that impacted his engagement  Used an iPad to implement the intervention
Nikopoulos and Panagiotopoulou (2015)	Multiple baseline across subjects	2 males; 12 years  Fxn not specified	Reducing vocal stereotypy  Two rooms of a secondary school for young people with autism (meeting room and generalisation room)	24-47second videos, number of viewings not specified, transferred to generalisation condition when average time spent in echolalia at least 30% lower  Echolalia defined as any non-functional and/or non-contextual repetition of speech vocalisations	Intervention discontinued for one participant who found videos distressing, other participant showed significant reduction in vocal stereotypy	G+  M+ (after 2 months)  F (IOA 98%)  SV (results not specified)	No F  Intervention not assessed in most naturalistic settings  Other self-stimulatory behaviours noted as replacement of vocal stereotypy but not formally recorded	One of few studies to assess effects on VSM on decreasing a problem behaviour
Schatz, Peterson, and Bellini (2016)	Multiple baseline across subjects	3 males; 9-11 years High fxn, two participants also diagnosed with language impairment	Task engagement during math class	3x1 minute videos for each student, presented alternately three days a week  On-task engagement during math's class was recorded on a partial interval recording system using 15 second intervals for 15 minutes	All participants demonstrated increases in on-task engagement	M+  F (IOA 89%)  SV+	No G measure  Baseline data was not stable before intervention began	Demonstrated reduction in undesirable behaviour

*Note.* 1: G = Generalisation, 2: M = Maintenance, 3: F = Fidelity, 4: SV = Social Validity, 5: fxn = Functioning Level, 6: + = Positive Result, 7: IOA = Interobserver Agreement, 8: VSM = Video Self-Modelling, 9: ASD = Autism Spectrum Disorder, 10: FU = Follow-Up



**Synthesis of study findings that employed video-self modelling.*****Social-communicative Skills.***

*Previous Reviews.* In a review by Bellini and Akullian (2007), VSM interventions targeting social-communication skills were generally effective; however, maintenance data were mixed and only two studies reported generalisation measures, of which the results were contradictory. A review by Delano (2007) found only two studies that assessed VSM on children's initiations (Buggey, 2005; Wert & Neisworth, 2003), both reporting positive results.

*Current Review.* Overall, the results across four studies were mixed. One study (Buggey, 2012) reported that while the target behaviour was selected based on developmental appropriateness, this was for typically developing children; the author noting that it may be necessary to better evaluate antecedent skills for children with ASD. Williamson et al. (2013) found that only one of three participants increased interpersonal greetings with VSM intervention. This participant was the only one who possessed all four of the prerequisite skills targeted for this study which included the ability to attend to a video, use verbal communication, imitate and self-recognise.

***Functional Skills.***

*Previous Reviews.* The results from two studies outlined by Bellini and Akullian (2007) indicated mixed results. A study involving a social story about handwashing indicated no consistent effects or generalisations across participants (Hagiwara & Smith Myles, 1999). Another increased task fluency in four areas including sorting laundry and packing lunches, whilst also decreasing interfering behaviours (Lasater & Brady, 1995). Further, these skills were maintained and generalised to other settings after the intervention was removed.

*Current Review.* Campbell et al. (2015) assessed hand washing with small increases in independent skills demonstrated. However, the participants in this study already had hand

washing experience, and subsequently had limited space for improvement resulting in a ceiling effect. Burton et al. (2013) reported a functional relationship between VSM and accuracy of math calculation; however, the videos were utilised by the participants/students when they were solving the math problems, which may not be realistic in real-world settings as this can be distracting for other students in the classroom. Hart and Whalon (2012) assessed academic responding with an ABAB reversal design, noting decreases in previous improvements when the video was removed.

### ***Challenging Behaviour.***

*Previous Reviews.* Delano (2007) reported positive results across two studies by Buggey (2005) with a reduction in tantrums and pushing classmates. These studies demonstrated generalisations across social-communicative behaviours, functional living skills and perspective-taking skills.

*Current Review.* One study examined VSM for reducing vocal stereotypy (Nikopoulos & Panagiotopoulou, 2015). One participant failed to complete the study due to a stressful reaction to the intervention video, while the second participant showed a significant reduction in echolalia. The authors concluded that challenging behaviour must be addressed prior to any VSM intervention. A large increase in 'on task' engagement was also found for two of three participants (Schatz et al., 2016). The authors note that these two participants demonstrated excitement for the intervention, requesting to view the video daily.

**Critique.** A large body of literature reports the benefits of using VSM, and some research suggests that self-modelling is more beneficial for individuals with ASD over alternative methods of VM (Delano, 2007). However, Bellini (2004) notes that few studies have investigated the unique effects of VSM without the use of additional intervention strategies. Technology has been shown to increase opportunities for students with disabilities to access the

core curriculum and achieve improved learning outcomes (Cihak & Bowlin, 2009), while video based instructional strategies assist with learning and generalising life skills. Whilst VM interventions can facilitate skill acquisition quite rapidly, for children with ASD, these new skills are only useful if they apply to normalised settings. Given that children with ASD experience difficulties in generalising newly learned skills to different environments or situations, Campbell et al. (2015) suggest that VM interventions may be more beneficial if they are implemented in the environments in which they normally occur. Thus, it is important that future research focusses on implementing these interventions alone, without the use of any additional treatments, and that they are conducted in the child's normal setting.

Wolfe (1978) suggest researchers must focus on intervention goals that result in socially important changes. This can be achieved by assessing the social validity of intervention goals, procedures and outcomes. It is interesting to note that whilst most recent research included social validity measures, many did not assess generalisation (Boudreau & Harvey, 2013; Bugghey, 2012; Bugghey et al., 2011; Campbell et al., 2015; Hart & Whalon, 2012; Williamson et al., 2013) or maintenance (Boudreau & Harvey, 2013; Campbell et al., 2015; Hart & Whalon, 2012). Using substitutable video model loops (slight variations of the same video model intervention or a version of multi-exemplar training) or introducing novel items throughout the intervention, may aid in generalisation. Maintenance and generalisation provide opportunities to measure the acquisition of new skills that will then assist in determining the overall effectiveness of these interventions and whether there is a need for additional strategies. Shukla-Mehta, Miller, and Callahan (2010) comment that documenting procedural fidelity of the various components of the intervention is needed in future studies. Delano (2007) argues that researchers should also include measures of treatment fidelity to ensure the intervention is developed and implemented as planned across all participants. However, Dowrick (2012a) notes that self-modelling should

involve skills that are similar to the individual's current abilities and are simple enough to achieve. Therefore, tailoring the videos to each child is an important component of the VSM process and will naturally create variations in treatment procedure. Many studies suggest determining the VM methods that will benefit individuals with ASD the most. One study reports that VSM is most effective for children with ASD that enjoy watching themselves on video and demonstrate a preference for visual learning (Sherer et al., 2001). However, while the ability to attend to a videotape for several minutes at a time is important, Dowrick argues that focussing on creating an intervention video that is suited to the individual is most important. Thus, the differences should lie in the video that is developed, not the individual differences.

### **Current Study**

Children with ASD experience a range of educational contexts including mainstream education, special schools and home school environments. In the last decade, many special schools have been forced to close due to a drive for inclusive education in New Zealand, as such, few special schools remain. The Special Education 2000 policies (Ministry of Education, 1996) have resulted in children with a range of disabilities, including ASD, being more likely to attend their local public school. As such, finding effective and efficient methods to improve these students' skills in the mainstream school environment is critical because there is a much higher child to teacher ratio. Therefore, teachers have less time to spend working one-on-one with an individual who has higher needs than their peers. Moreover, a broader spectrum of autism identified in the DSM-5 means greater variability in children's functioning; thus, there is a need for research that clearly identifies interventions that are appropriate for an increasingly diverse population (Burton et al., 2013). Research using video technology for skills instruction in students with ASD has produced promising results. However, there is a need for more evidence regarding the effectiveness of VPM and VSM alone, without instructional prompts and

reinforcers, or other additional components, to qualify these interventions as evidence-based practice for producing behaviour change in students with ASD (Shukla-Mehta et al., 2010).

Given the scarcity of research focussing on VPM for improving adaptive behaviours of adolescents with ASD, this is an important area for future research.

Including measures of generalisation, maintenance, social validity, and fidelity will help determine the overall effectiveness of these treatments. An important aspect of this research is conducting the intervention in such a way that parents/caregivers and teachers can easily replicate the treatment. As such, the intervention will occur in isolation, without the use of any additional treatments, and will be conducted in the child's normal setting using technology that is common and easily accessible. Delano (2007) argues that further research is needed to determine if VM can facilitate the acquisition of new skills, but also reduce challenging behaviours. The current research will include a functional behaviour assessment to determine the antecedent and consequences maintaining the students' behaviour. The focus will be on teaching new skills to replace challenging behaviour (rather than concentrating on the undesirable behaviour itself), providing a positive solution to a problem. Establishing the best way to implement VPM and VSM interventions for children with ASD will potentially allow teachers, teacher aides, educational psychologists, and parents/caregivers to develop modelling videos on their own, providing a practical method for teaching new skills to children and adolescents with ASD.

**Aim.** The purpose of this study is to address questions regarding the use of VM for students with ASD. At present, there is limited research comparing the efficiency and effectiveness of different VM methods across students and/or behaviours. The specific aims and hypothesis for the current study were as follows:

1. To investigate the effectiveness and efficiency of VPM and VSM on the adaptive behaviour of six students between 9-17 years with ASD.

*Hypothesis:* It is expected that VPM and VSM will result in rapid skill acquisition that is maintained over time.

2. To assess whether learning a new adaptive behaviour subsequently decreases undesirable behaviour that occurs within the situation (e.g., learning the adaptive skill of asking for a break as opposed to becoming upset and leaving the classroom).

*Hypothesis:* It is proposed that as the student's skills increase, their challenging behaviour will decrease.

3. To assess the generalisation of skills and social validity of the intervention, as perceived by the participant's classroom teacher.

*Hypothesis:* It is expected that the skills learnt will generalise to other areas of their functioning, and that their teachers will regard this as a socially valid intervention that can be utilised in their classroom.

## **Method**

### **Design**

The present study used a multiple baseline across behaviours, nested in a single-subject, yoked participants design. The yoked participants alternated between VPM and VSM treatments. The study consisted of baseline, intervention and two maintenance phases. A yoked control procedure involves matching participants based on factors such as age, gender and functional abilities, to receive the same intervention or reinforcement but with different contingencies (Salkind, 2010). This research method was chosen due to its efficiency and as an experimentally sound technique for comparing the effects of two distinct treatments on a target behaviour (Cooper, Heron, & Heward, 2007). Individual treatment effects can be analysed both within subjects and between yoked pairs (Blampied, 1999). This research benefited from employing a

multiple baseline design as the intervention instigated learning that could not be reversed or forgotten (Barlow & Hersen, 1984).

Each yoked pair was randomly assigned to one of three baseline conditions. Baseline 1 involved the yoked pair completing four baseline probes within two weeks, baseline 2 completed six baseline probes within three weeks, and baseline 3 was to complete eight baseline probes over four weeks. The baseline conditions were randomly selected for each pair to increase validity. The intervention was introduced after a stable baseline was established (relatively consistent level, trend, and variability of at least three data points) to allow transparency of functional relationships between variables (Barger-Anderson, Domaracki, Kearney-Vakulick, & Kubina, 2004). Ethically, some may argue that prolonged baselines are not good practice, particularly if the participant requires the intervention on a more immediate basis (Barger-Anderson et al., 2004); however, this was not the case in the current research.

The dependent variable was the performance of a new adaptive behaviour or improved performance of an existing behaviour. This target skill was determined after a full assessment process had been completed. The target skill was the same for each matched pair. Dowrick (2012a) states that self-modelling interventions are most effective with 1-6 viewings of a 2-3 minute video, with times greater than this not increasing effects (Dowrick & Raeburn, 1995). Thus, the independent variable was a 2-2.5 minute video presented multiple times over 5 sessions (three weeks) featuring the participant or the participant's peer engaging in appropriate component behaviours of the target skills.

## **Ethics**

Approval was obtained from the University of Canterbury Educational Research Human Ethics Committee following registration of the thesis proposal and prior to any communication with schools (Appendix A).

### **Initial Recruitment**

The researcher's supervisor identified schools to approach and the researcher emailed the school principals explaining the study objectives and participant requirements, requesting a meeting if they were interested in taking part. During the meeting, the researcher explained the study in full and provided information packs that contained a cover letter (Appendix B), information sheet (see Appendices C, D, E, F, G and H), consent forms (see Appendices I, J, K and L) and an assent form (Appendix M) for principals, the Chair of the Board of Trustees, teachers, parents/caregivers and children/adolescents that were interested in taking part in the study. The information packs contained the contact details for the researcher and the researcher's supervisors, in case of any questions. Return envelopes were provided for the consent and assent forms. The school principal was asked to contact the classroom teachers and parents/caregivers of students who might be interested in participating in the study, and to pass on the appropriate information packs.

Once the parent/caregiver had contacted the researcher, consent and assent forms from the teacher, parent/caregiver and child or adolescent were obtained. The researcher then contacted the parent/caregiver by telephone to organise an initial screening procedure (see Appendix N). The semi-formal screening interview with parents/caregivers was conducted over the phone or at the participant's family home. The researcher and her supervisors then assessed the details of potential participants and identified possible target behaviours and matched peers.

### **Participants**

Participants were six children and adolescents, aged 9-16 years with ASD, who would benefit from learning a new adaptive behaviour. Participants attended a public primary school or secondary school with a special education unit, in Christchurch city. These schools had a blanket policy where filming was allowed for educational purposes. This was because footage taken for



the study included other students in the background or featured students that the participant was playing with. All participants were diagnosed with ASD by a paediatrician or registered psychologist and were able to attend to a 2-3minute video. Exclusion criteria included children and adolescents who were unable to attend to a 2-3 minute video, those who were not diagnosed by a paediatrician, psychologist, psychiatrist, or other specifically trained physician, and any participants whose parents/caregivers did not report difficulties within at least one of the four adaptive behaviour domains. Due to a number of methods and measures being utilised during diagnosis, these were recorded where possible, but did not form part of the exclusion criteria. Participants with high levels of maladaptive externalising behaviours were excluded in cases where there was a risk to themselves or others. The six participants were randomly assigned within their peers to either VPM in which they viewed their peers video self-model or VSM where they viewed a video of themselves. Participants were given a number and pseudonym to ensure their anonymity. Table 3 displays their basic demographic data.

Table 3

<i>Participant Pseudonyms and Demographic Information</i>					
Name	Age (years)	Gender	Ethnicity	Diagnosis	Condition
Sam	16	Male	Māori	ASD <sup>1</sup> , ADHD <sup>2</sup>	VPM <sup>3</sup>
Luke	14	Male	Māori	ASD, Down syndrome, SLD <sup>4</sup>	VSM <sup>5</sup>
Catherine	14	Female	NZ European	ASD, ID <sup>6</sup>	VPM
George	9	Male	Somali	ASD, SLD	VSM
Isaac	12	Male	NZ European	ASD	VSM*
Scott	12	Male	Samoan	ASD	VPM*

*Note.* 1: ASD = Autism Spectrum Disorder, 2: ADHD = Attention-Deficit/Hyperactivity Disorder, 3: VPM = Video Peer-Modelling, 4: SLD = Specific Learning Disorder, 5: VSM = Video Self-Modelling, 6: ID = Intellectual Disability. \*Isaac and Scott were removed from the study during or after baseline, and did not receive treatment.

**Sam.** In addition to the information presented in Table 1, assessment using the Vineland Adaptive Behaviours Scales (Vineland-II), Teacher Rating Form (Sparrow et al., 2006) identified ‘Low’ performance in all areas; communication, daily living skills, socialisation. Sam’s parent gave written consent for Sam to participate in the study but was unable to be contacted thereafter. As such, the information collected for Sam was from his teacher only. Sam had good receptive but limited expressive language skills, however, was making progress throughout the year. He was a sociable student who appeared to enjoy interactions with others, waving and greeting others around the school. Sam did not usually engage in aggressive behaviour; however, he needed a full-time teacher aide due to past incidents with inappropriate touching. Sam tended to refuse tasks, often wanting to spend time on an iPad® instead. Sam was part of a transitional classroom where the students were preparing to leave school and engage in the community. Thus, Sam’s teacher identified mail collection as a suitable adaptive behaviour to learn, as this fit well with his overall learning objectives. Sam had no prior experience of collecting the mail from the office and was not able to complete the more intricate steps without intervention.

**Luke.** The Vineland-II, Teacher Rating Form demonstrated ‘severe deficits’ in communication and daily living skills, and a ‘moderate deficit’ in socialisation. Luke was non-verbal and had physical issues related to hyper-flexibility and was the only participant with co-existing Down syndrome. He received speech and language therapy and occupational therapy at school. Luke was described as “easy-going” with minimal reactive behaviour; however, he would occasionally hit others as a way of interacting, or throw things to get the attention of others. Luke’s daily living skills were limited, needing prompts and hand-over-hand support to complete a number of tasks. He had a tendency to stare at others or sit down when he did not understand, or want to engage in the current task. Luke usually interacted well with others, and seemed to enjoy going for walks around the school; however, he had difficulty engaging in

classroom activities because of limited functional skills. Subsequently, mail collection was chosen as a target skill as this incorporated his more advanced social skills into an adaptive behaviour aimed at improving his functional skills. Luke had no previous experience in completing this task, however did go for walks daily, sometimes taking a route that went past the school office.

**Catherine.** Catherine scored in the ‘Low’ range on all three subdomains of the Vineland-II, Teacher Rating Form. Catherine had a visual impairment, however wore glasses throughout all sessions of the study. Despite being non-verbal previously, Catherine had begun using 1-2 word phrases in the last few years. Catherine also presented with echolalia and received speech and language therapy at school. Catherine was an active and physical student who struggled to attend to a task that required her to sit down. She had a tendency climb on furniture, sometimes posing a risk to herself in others. If in close proximity to others, she would regularly touch them; sometimes hugging or jumping on other students. When asked to take part in difficult activities, Catherine would engage in behaviours such as pressing her hand to her mouth, squealing and falling to the ground. Improving social skills, in particular turn-taking, was identified as a target for Catherine as she had a tendency to protest when asked to engage in these activities, often moving away and sometimes becoming upset. Therefore, cooperative play appeared to be an appropriate adaptive behaviour to improve on. Catherine had some experience of playing one-on-one with a peer, however struggled to understand game rules (e.g., waiting for a turn) and would only engage for very short time periods of around 1 to 2 minutes. Catherine was originally matched with Isaac, however, the researcher ceased data collection with Isaac and so after baseline, she was then matched with George.

**George.** George scored in the ‘Low’ range on all three subdomains of the Vineland-II, Teacher Rating Form. George had reasonable receptive and expressive language skills, however

did have difficulty with the meaning of some words which could result in confusion at times. George would often become frustrated when asked to engage in activities he found more difficult, quickly becoming unwilling to engage, sometimes throwing things and/or leaving the room. George had minimal interaction with his peers in the classroom, choosing to work on his own or with the teacher only (particularly during math class). When he did engage with others to play games, he experienced particular difficulty in dealing with loss, becoming upset and claiming others' were cheating. George was in a mainstream primary school with large numbers of students in his classes; therefore, his teacher commented that supporting George and the other students in his classroom would be more manageable if he were to engage with his peers. As such, cooperative play was chosen as a valuable adaptive behaviour to encourage George to engage with others in a prosocial manner and persevere with tasks he finds more challenging. Originally George was assigned to 'Cooperative Play' with math games, however he was switched to 'Cooperative Play' with card games when the researcher ceased data collection with his peer (Scott). George was then matched with Catherine.

**Isaac.** Isaac scored in the 'Low' range on all three subdomains of the Vineland-II, Teacher Rating Form. Isaac had good receptive and expressive language skills, and was achieving at his chronological age academically. Isaac chose not to interact with his classmates. During activities where he was required to, he would become upset when things were not done his way. He was particularly noise sensitive and would scream at others when he was overwhelmed by noises they were making. Occasionally, Isaac would kick or punch other students. He struggled to sit during long periods of time and would disrupt others during class lessons. To encourage Isaac to stay seated and interact with his peers fairly, cooperative play was chosen as the target skill for intervention. During the first baseline session, Isaac stated that he did not want to be filmed, as such, the researcher ceased recording. In subsequent sessions, the

researcher asked Isaac if he consented to being filmed, he declined on all occasions.

Unfortunately Isaac's challenging behaviour had escalated from the time of gaining consent and the beginning of baseline data collection. It appeared that the researcher's presence was unsettling for Isaac and as a result, his challenging behaviour intensified when the researcher visited his classroom. Isaac refused to engage on a number of days, meaning the data collected was not a true representation of his cooperative play skills. During session 4, Isaac became upset with his peer and physically hurt him. After discussion with the researcher's supervisors, the decision was made to cease data collection with Isaac due to the aims of the research, ethical issues regarding his consent, and the risk posed to himself and others.

**Scott.** Scott scored in the 'Low' range on all three subdomains of the Vineland-II, Teacher Rating Form. While Scott was verbal, he had some difficulty with speech and communication as English was his second language. Scott encountered interpersonal difficulties with his classmates, at times interfering with others' activities and hassling them until they became upset. Scott's behaviour tended to escalate quickly if unwanted pressure was not removed. He would sometimes become physically aggressive and needed to be removed from the classroom because of this. This meant that his aggression was usually directed towards his classroom teacher. His teacher identified the possibility of playing a social game with others, learning to answer questions only when asked, and using kind words and comments. As such, cooperative play was chosen as the target skill. During baseline, Scott refused to engage on a number of occasions, meaning the data collected was not a true representation of his cooperative play skills. After 2 sessions, Scott stated that he did not want to be filmed anymore, as such, no further footage was taken. Scott began to become immediately distressed when the researcher entered his classroom, resulting in the researcher leaving the classroom to remove the "pressure" before his behaviour escalated. After discussion with the researcher's supervisors, the decision

was made to cease data collection with Scott after 3 baseline sessions due to the aims of the research, issues regarding his consent, and the risk posed to himself and others.

### **Setting**

The initial teacher interview and Vineland-II, Teacher Rating Form were conducted/administered in each participant's classroom after school hours. The researcher also spent time in each of the participant's classrooms, observing the student's behaviour and teaching them how to play the games for 'Cooperative Play'. The baseline, intervention, and maintenance data was collected in the student's classroom or school grounds. All participants attended an inclusive high school unit which was part of a larger high school, except for George, who was at a mainstream primary school. In the high school unit, classrooms were arranged by age, abilities and learning goals. Each class was staffed by a lead teacher, and  $\geq 3$  teacher aides. Students received a full range of support services including speech and language therapies, occupational therapies and behaviour support plans. The high school (where 'Mail Collection' took place) was large with both joint and separate buildings for different purposes. However, the direct route from the unit to the school office was relatively straight forward. In the primary school, classrooms were arranged by age, and had approximately 30 students per classroom. However this was part of a collaborative learning environment where up to three classrooms joined for the same lessons. In both schools, all classrooms were typical with clusters of tables and chairs for students to sit in groups.

### **Apparatus**

Video was taken using an Apple iPhone 6® (and a tripod where required for stability) and edited on an Apple MacBook® laptop computer using the built in iMovie® software program. A pack of playing cards was used for the "memory" and "snap" games. The math games utilised a cup and Popsicle sticks with numerical questions on them, and a board game called "Guess that

Number”. The filming sessions utilised any materials that were usually present within the setting. Participants were given access to their videos via Dropbox, and were able to watch this on a device in their classroom, or were given a tablet from the University of Canterbury Psychology department to use throughout the duration of the study.

## **Measures**

The Vineland-II, Teacher Rating Form was used to complete a functional behaviour assessment (FBA) to guide each participant’s intervention. The Vineland-II provides clinical information to assist in formulating the educational and vocational plans for adaptive behaviour domains that include (a) Communication, (b) Daily Living Skills/Self Help Skills, (c) Socialisation/Social Functioning/Interpersonal Skills, and (d) Motor Skills (Carter et al., 1998). Data from the Motor Skills subdomain (whilst designed for ages 3-6 years) was collected to determine if the student was capable of performing the specific components of the target skills. Standardised instruments are employed to highlight any areas or issues in daily activities that are part of the participant’s personal and social competencies in order to guide educational and vocational planning for the individual (Sparrow et al., 2006).

The researcher created observation sheets that were different for each of the six participants. These were designed to gather data on the setting events and target skills using event recording or interval schedule procedures. The observation schedule for ‘Mail Collection’ was a step-wise task analysis that involved 17 steps (see Appendix O). A time limit was identified for each step to delineate how long the student had to perform the step. The observer could rate each of the 17 steps as either; (i) correct, (ii) incorrect or (iii) over time pass. The observer could also circle options for any challenging behaviour (predetermined during the FBA) observed during each step (e.g., ‘moving away’, ‘saying “no”’). The observation schedule for ‘Cooperative Play’ included 15 x 10 second intervals (see Appendix P). The observer had two

response options; (i) yes or (ii) no, to delineate whether the student had met the operational definition of cooperative play or not. The observer could also circle options for any challenging behaviour (predetermined during the FBA) displayed during each interval. For all observation schedules, a total percentage of 'correct' responses was calculated by dividing the number of correct responses by the total number of possible responses and multiplying by 100%.

Additionally, the total number of challenging behaviours demonstrated throughout the session was tallied and divided by the total number of steps or intervals the participant was present for.

At the end of the study, teachers completed a short social validity and generalisation questionnaire that was designed by the researcher and adapted from Buggey (2012) and Buggey et al. (2011). The social validity section helped determine if the teachers viewed VPM and VSM as a socially acceptable and viable intervention to utilise at school. The generalisation section helped determine if any of the new skills generalised to other situations, settings, or persons.

## **Procedure**

**Functional Behaviour Assessment.** Once a participant's eligibility was established, a FBA was conducted to identify the underlying reasons behind their current difficulties within the adaptive behaviours (e.g., identifying the reasons why the student sits down when asked to go to the office). The assessment findings assisted in planning the intervention and specific data to be recorded. A meeting was organised with the participant's classroom teacher at the school, after school hours. Here, the researcher administered the Vineland-II, Teacher Rating Form, and conducted a semi-formal interview to gather information on the participant's supports, skills and difficulties in each of the four adaptive behaviour domains (Appendix Q). The researcher also observed the participants in their classroom. Findings from the FBA were discussed with the researcher's supervisors and used to determine the specific intervention and target behaviours for each participant. This information was also used to ensure the participant was capable of each



intricate part of the target skill. For example, collecting mail from the office was split into separate component behaviours (e.g., take mail bag from teacher, leave the classroom, walk directly to the office). These were listed separately for the researcher to mark as completed or not completed during data collection. Observation of participants took place at predetermined times in the student's classroom or within the school during academic instruction. Data was collected by the researcher, and required a commitment of 11 to 13 weeks from the participant and their teacher/s to allow for data collection during two weekdays.

**Pre-training.** Prior to baseline, students assigned to 'Cooperative Play' participated in a pre-training period to determine whether they understood the rules of the games. The researcher played the games as the opponent and provided instruction to the participant throughout. Criterion was established when the participant could take three consecutive turns abiding by the game rules, with no instruction given. The researcher consulted the classroom teachers to determine suitable playing peers for each participant. The playing peers were selected based on their teacher's knowledge of their adaptive behaviour skills, in particular, they were students who enjoyed playing games with others, and who were cooperative and relatively social. The same pre-training procedure was repeated with the participant's playing peers.

**Baseline.** Baseline evaluations were conducted for either 4 or 6 sessions prior to the intervention. Originally, the first pair were to complete 4 baseline sessions. However, because Sam's data increased substantially during session 4, the baseline was continued for a further two sessions to establish a more stable baseline. Data was collected by the researcher in person. Event recording procedures were used for the functional skill (collecting the mail) and interval recording was used for the social skill (playing cooperatively). The baseline, intervention and maintenance phases were staggered across participant pairs to ensure that any changes observed were due to the treatment rather than a chance factor (Christ, 2007). That is, the second pair

commenced baseline measures when the first pair began intervention. Similarly, the third pair were to begin baseline when the second pair entered the intervention. However, due to time constraints and Isaac not engaging on a number of days, the third pair began baseline after the second pair had completed two baseline sessions. George completed three baseline sessions playing math games when data collection ceased with his partner (Scott). After undergoing new pre-training, George began baseline sessions again, this time playing card games. As a result, the baseline sessions for Catherine and George, the 'Cooperative Play' pair, were collected on different weeks.

For those assigned to 'Mail Collection', the number of steps completed were recorded as a successive approximation. No teaching or cueing was given, however two verbal prompts were utilised; "what's next?" and "just do your best to do it by yourself". A correct response was scored if the participant accurately and independently completed the specific step on the task analysis within the specified time limit. Incorrect responses were scored if the participant was unable to complete the step, or failed to complete the step correctly. The scoring ceased when the participant was unable to complete a step, and did not respond to prompts. However, scoring continued if the participant failed to complete the step correctly but was still able to move on to the next step (e.g., stopped to look at the garden while walking to the office). An over-time pass was scored if the participant completed the step over the specified time limit, but this was not counted towards correct responses.

Participants assigned to 'Cooperative Play' chose which of the two games they wanted to play during each session. The two card games included 'Memory' and 'Snap'. In 'Memory', all the cards are laid face down. Two cards are flipped face up over each turn; the objective being to find matching cards. In 'Snap', players take turns to place one card on top of the other, until two consecutive cards match in suit; the objective being to get your hand on the matching set of cards

to win all the cards placed before. The two math games included 'Kaboom' and 'Guess that Number'. In 'Kaboom', a cup with sticks harbouring maths questions was passed back and forth between players. If they got the question correct, they could keep the stick, if they got it wrong, they put the stick back. 'Guess that Number' is a variation of the popular board game 'Guess Who', however participants were required to guess their peer's number by using place value questions.

Data recording commenced when the observer gave the instruction "you can start playing", and ceased after 5 minutes of play. The researcher positioned herself where she could see the participant and the game pieces clearly. No prompts or guidance were given by the researcher to the participant or their playing peer. The number of intervals engaged in 'Cooperative Play' were recorded on the observation sheet. The operational definition for 'Cooperative Play' involved abiding by the game rules which was comprised of the following; a) taking turns within 10 seconds (unless clearly thinking, in which case the researcher would allow a further 20 seconds), b) keeping all game equipment that would be required for fair play opportunities within vision (i.e., not hiding cards in the memory game), c) giving correct responses/information where required, d) leaving the game set up as is (i.e., not tipping the sticks out of the cup or mixing up the memory cards), e) keeping items they have won (i.e., kaboom sticks or memory card sets), f) allowing their peer to keep the items they have won, and g) returning the items they have not won. In order to score 'yes', the participant was required to engage in all aspects of the operational definition for the entire 10 second interval. If the participant left the area during the session, the researcher was unable to score challenging behaviour due to visibility issues. In these instances, "no" was scored for each interval, but no challenging behaviour was recorded. The calculation of challenging behaviour was adjusted accordingly.

**Video Production.** To date, no studies have used the video recorder during baseline measures, as such, this equipment may have had some effect (positive or negative) on the presentation of target skills. To address this gap in the literature and to reduce threats to internal validity, video recording equipment was used during the baseline condition. To control for incidental learning, the participants were directed to complete the steps required for the videos in a randomised order. Each component skill was video recorded, and edited to create a video self-model with the correct order of events for viewing. Sometimes the participants were very enthusiastic about being the “star” in a “movie” and would act out the scenarios for the researcher, other times they were directed and given prompts to engage in certain behaviours. Some naturalistic recording, in which the participant was given no direction also occurred.

The videos required separate components of the target skill to be stitched together to create a full sequence of appropriate behaviours. Any errors/undesirable behaviours were edited out to create a video model of the participant accurately and independently engaging in the target skill. Audio used in this study included Luke knocking on the principal’s door, the principal greeting Luke, and George saying "sometimes we lose, that's okay". These short pieces of audio were selected to emphasise key learning points for the participants that were difficult to highlight otherwise. The iMovie® program allowed the researcher to use fit, crop and zoom effects to eliminate unwanted distractions in the background and focus in on important information (e.g., a pair of cards). Other features of iMovie® used in the production of the videos were clipping movies, transitioning between clips, detaching audio, adding freeze frames, rotating video, slow motion, fast-forward and rewind.

**Intervention.** The intervention phase occurred over 5 sessions (3 weeks) and was conducted 1 week after each participant’s baseline sessions. The researcher attended the participant’s classroom at the pre-determined time each day to sit with the participants as they

watched their peer- or self-modelling video. The time, date and participant's reaction to the video, in addition to the number of times they watched the video, was recorded on the observation schedule. Whilst participants were required to watch their video at least once per day, there was no limit on how many times they watched it. Data collection began immediately after the participants watched their video.

**Maintenance.** The first maintenance phase occurred over 5 sessions, 1 week after the intervention phase. The second maintenance phase occurred over 5 sessions, 2 months after the intervention phase. During the two maintenance phases, the videos remained available for the participants to use. Teachers were encouraged to prompt the students to watch the video if any of the newly acquired skills began to lapse or their challenging behaviour began to increase.

**Social Validity and Generalisation.** After the maintenance phase was completed, the student's teachers completed a short questionnaire that assessed the generalisation and social validity of the intervention (Appendix R). When the data was returned via post to the researcher, participants received a \$20 Westfield voucher to acknowledge their participation in the study. Access to their peer- or self-modelling video was also maintained via the use of 'Dropbox'.

### **Reliability**

Interobserver agreement (IOA) data was collected for 30% of baseline, intervention and maintenance sessions. The same two observers participated throughout. The number of agreements (point-by-point from the task analysis or interval schedule) was divided by the total number of agreements and disagreements, then multiplied by 100% (Cooper, Heron, & Heward, 2007). A summary of agreement totals are presented in Table 4. Interobserver agreement ranged from 91.2% to 100% for the functional skill (collecting the mail) and 95.6% to 97.8% for the social skill (playing cooperatively). These figures are within the conservative range of 90% to 100% suggested by (Cooper et al., 2007b).

A frequency-ratio approach was used to calculate total agreement for challenging behaviour. This involved taking the sum of occurrences recorded by each observer and dividing the smaller total by the larger total and multiplying by 100% (Cooper et al., 2007b; Kennedy, 2005). A summary of the total agreements for challenging behaviour are presented in Table 5. Interobserver agreement ranged from 0% to 100% for 'Mail Collection' and 50% to 100% for 'Cooperative Play'. The difficulty with having a low occurrence of challenging behaviour meant the IOA's were generally very high or very low. In the intervention phase of 'Mail Collection', one observer recorded 1 challenging behaviour for Luke, while the other observer recorded 0. This resulted in an IOA of 50% overall for 'Mail Collection' (100% for Sam, and 0% for Luke). Similarly, in the maintenance 2 phase of 'Cooperative Play', one observer recorded 2 challenging behaviours while the other observer recorded 1. This resulted in an IOA of 75% (50% for Catherine and 100% for George). However, the mean IOA over the four participants and all phases was 90.63%. This figure is within the conservative range suggested by Cooper et al. (2007b).

Table 4

*Interobserver Agreement Totals per Study Phase*

	Baseline	Intervention	Maintenance 1	Maintenance 2
Mail Collection	100	100	91.2	95.2
Cooperative Play	97.8	96.7	95.6	97.8
Overall	98.9	98.4	93.4	96.5

Table 5

*Interobserver Agreement Totals for Challenging Behaviour per Study Phase*

	Baseline	Intervention	Maintenance 1	Maintenance 2
Mail Collection	100	50.00	100	100
Cooperative Play	100	100	100	75.0
Overall	100	75.0	100	87.5

### **Data Analysis**

All data was tallied and an overall total were summed for each session. The proportion of 'correct' responses was then calculated. Data was then graphed for visual inspection and changes in the variability, level and trend of each participant's initial baseline data were analysed against their intervention phase and the two maintenance phases. Performance was analysed visually for changes within participants and within yoked pairs in order to compare and examine the effect of VPM and VSM on skill acquisition. In addition, the percentage of data points exceeding the median of baseline phase approach was used to establish intervention effect sizes. To calculate percentage exceeding the median (PEM), Ma (2006) suggests researchers focussing on increasing behaviours should draw a median line for the baseline data, and calculate the percentage of intervention data points that fall above the median line.

The researcher also recorded the number of challenging behaviours, writing a tally at the end of each session for all participants in the study. The total sum of challenging behaviours was then divided by the number of steps or intervals. Where participants were unable to complete all the required target behaviours, the number of challenging behaviours were divided by the number of steps or intervals before data collection ceased. This produced a mean number of challenging behaviours presented per step or interval.

To determine the efficiency at which new skills were acquired, a criterion for each target behaviour was determined. For 'Mail Collection', this was when the participant successfully performed all steps of the task analysis. For 'Cooperative Play', this was when the student successfully engaged in the operational definition of cooperative play across all intervals within the 5 minute schedule.

### Results

As shown in Figure 1, three of the four participants made significant gains in the percentage of ‘correct’ responses on ‘Mail Collection’ and ‘Cooperative Play’. No effect was observed for Luke. The mean number of correct responses across all study phases are shown in Table 5. The challenging behaviour results are presented in Figure 2. Appendix S (Table 7) displays the results for the two students removed from the study at baseline.

Table 6

*Mean Number of Correct Responses for each pair across Study Phase*

Student	Baseline (%)	Intervention (%)	Maintenance 1 (%)	Maintenance 2 (%)	Number of Video Views During Intervention
<b>VPM M</b>	<b>17.21</b>	<b>67.30</b>	<b>74.90</b>	<b>64.80</b>	
Sam	29.17	90.40	95.20	96.40	7
Catherine	5.25	44.20	54.60	33.20	9
<b>VSM M</b>	<b>16.00</b>	<b>54.50</b>	<b>44.00</b>	<b>62.70</b>	
Luke	12.00	14.40	26.00	30.80	10
George	20.00	94.60	62.00	94.60	5
<b>VPM &amp; VSM M</b>	<b>16.60</b>	<b>60.90</b>	<b>59.45</b>	<b>63.75</b>	



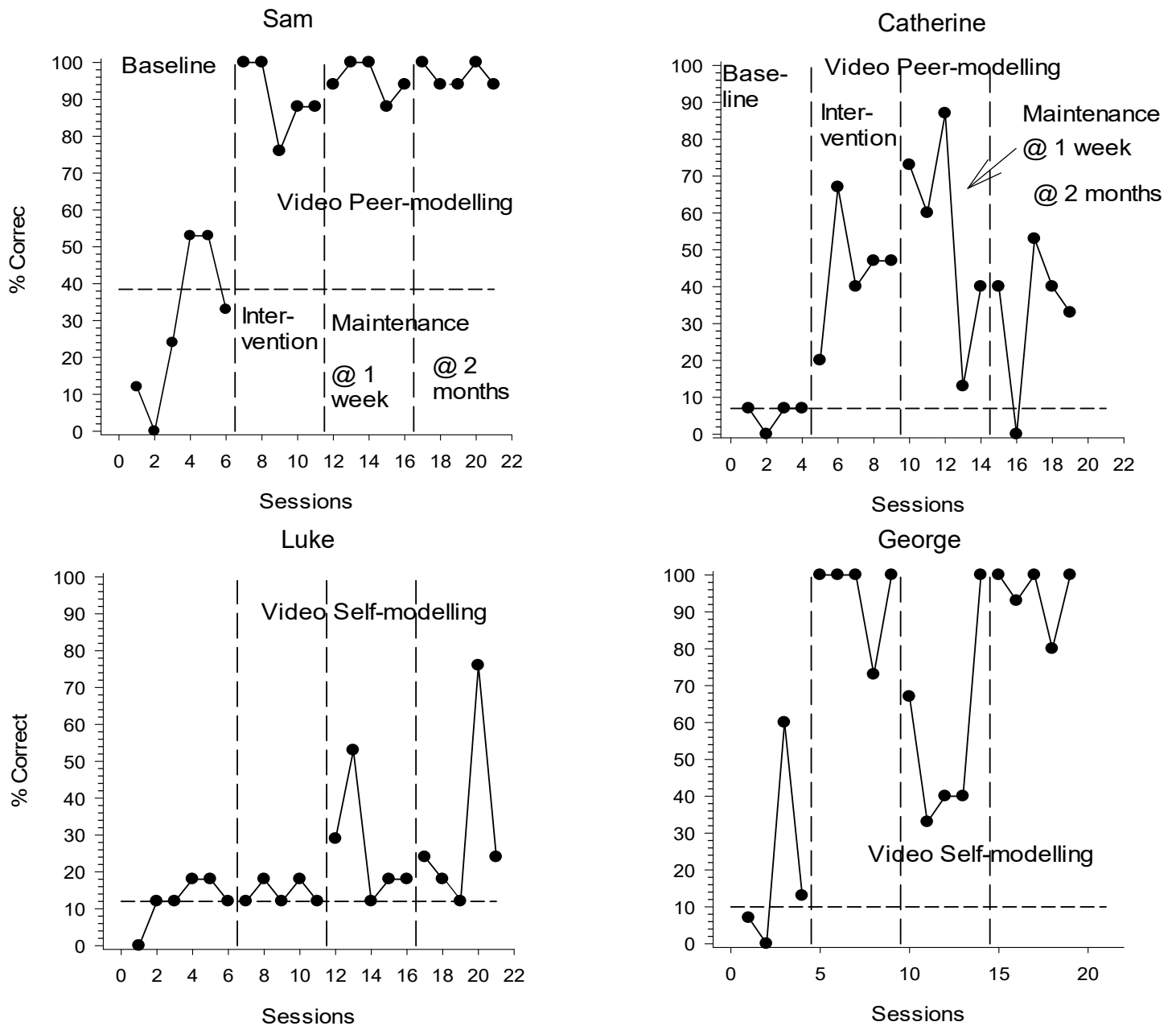
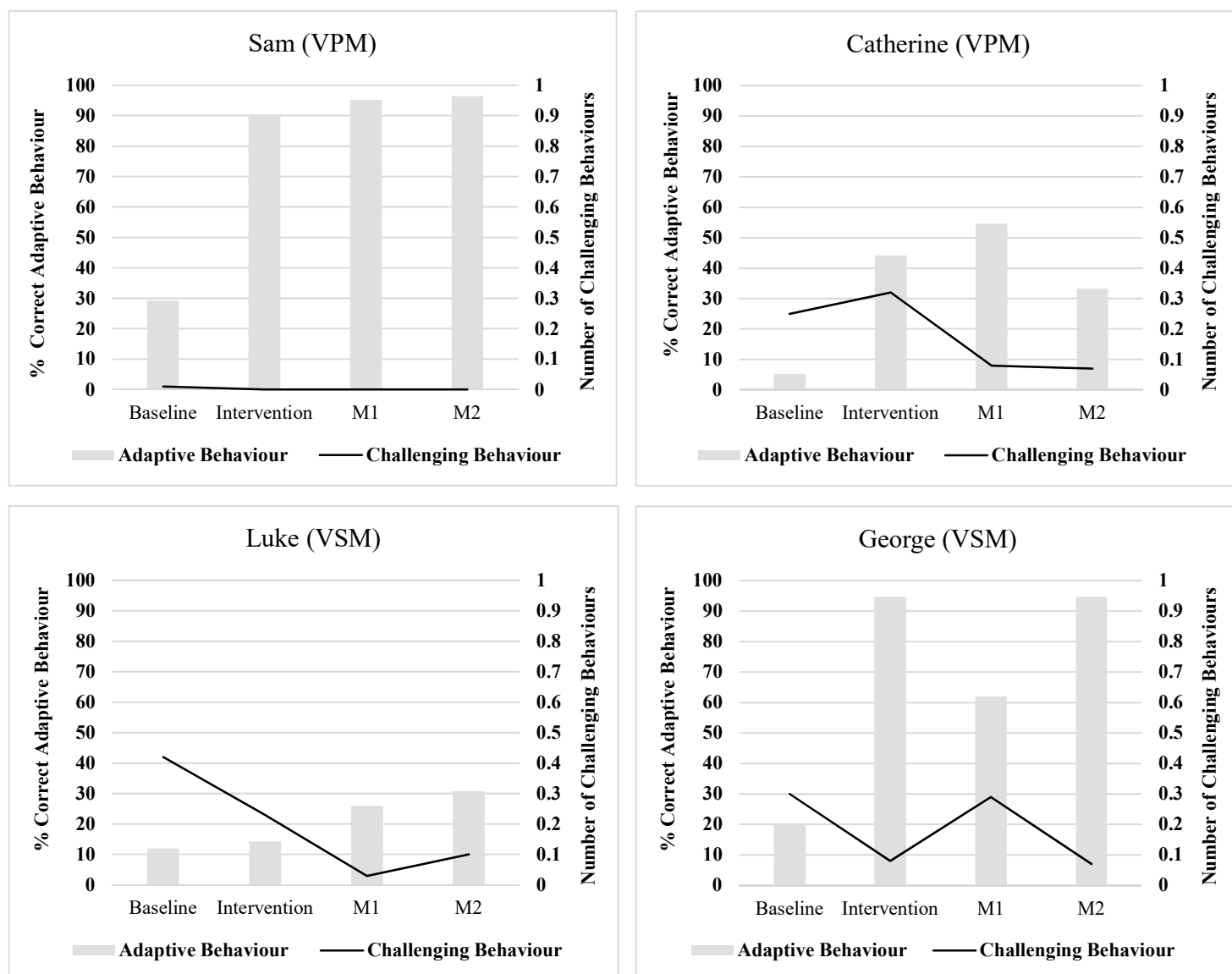


Figure 1. Percentage of Correct Responses per Observation Session among Study Participants.



*Figure 2.* Mean Percentage of Correct Responses versus Mean Number of Challenging Behaviours Presented per Step or Interval over Study Phase. M1 = Maintenance at 1 week; M2 = Maintenance at 2 months.

### Effectiveness

Effectiveness refers to the amount of learning that occurred during the intervention. Luke achieved a PEM score of .40, which according to R. I. Parker and Vannest (2009) is a weak effect. In contrast, Sam, Catherine and George all scored 1.0, indicating a strong effect.

**Efficiency**

Efficiency refers to the speed at which the behaviour change occurred due to the intervention. Shown in Figure 1, Sam and George met criterion on the first intervention session (each scoring 100%), after viewing their videos two times and once respectively. In contrast, Luke and Catherine did not meet criterion in any of the study phases. Both VPM and VSM were equally efficient in producing rapid behaviour change for Sam and George across the two target behaviours.

**First Yoked Pair: Sam (VPM) and Luke (VSM)**

Sam's scores were slightly more stable across all phases compared to Luke (as per Figure 1). Sam showed rapid skill acquisition during the intervention phase (meeting criteria on his first intervention session), and maintained these skills throughout the duration of the study.

**Sam.** During baseline, Sam performed an average of 29.17% of the steps in the task analysis, with a median of 38.5% and a range of 12.00% to 53.00%. His baseline data was highly variable with an ascending trend line. During intervention, Sam demonstrated a rapid performance increase with a steady trend that descended slightly. His average rate of performance increased to 90.40%, with a 61.23% skill acquisition. During the two maintenance phases (1 week and 2 months), Sam retained those skills with an average of 95.20% and 96.40% respectively. He presented with only 1 challenging behaviour during baseline and none throughout the remainder of the study.

**Luke.** During baseline, Luke performed an average of 12.00% of the steps in the task analysis, with a median of 12.00% and a range of 00.00% to 18.00%. His baseline data was relatively consistent with a slight ascending trend. During intervention, Luke demonstrated minimal increase in task performance; shown by the steady trend-line in Figure 1. His average performance was 14.40%, with a 02.40% skill acquisition. During the two maintenance phases (1

week and 2 months), Luke's performance showed a slight increase with averages of 26.00% and 30.80% respectively. While Luke presented with minimal challenging behaviour, as shown in Figure 2, this generally decreased as adaptive behaviour increased.

### **Second Yoked Pair: Catherine (VPM) and George (VSM)**

George's data was more stable than Catherine's. George also demonstrated more efficient skill acquisition during the intervention phase (meeting criteria on his first intervention session), and maintained those skills throughout the study (Figure 1). While Catherine did not meet efficiency criterion throughout the study, she did demonstrate significant skill acquisition during intervention, and these skills were maintained. Differences between VPM and VSM were exhibited within the yoked pair, however, on this occasion the student assigned to VSM (George) acquired the skill set more efficiently, with more stability, and learnt a greater proportion of the steps in comparison to Catherine (VPM).

**Catherine.** During baseline, Catherine engaged in 'Cooperative Play' on average for 5.25% of time intervals, with a median of 07.00% and a range of 00.00% to 07.00%. Her baseline data was relatively stable. During intervention, Catherine demonstrated a performance increase with a variable, slightly ascending trend. Her average performance increased to 44.20%, with a 37.20% skill acquisition. During the maintenance phases (1 week and 2 months), Catherine retained those skills with averages of 54.60% and 33.20% respectively. As shown in Figure 2, challenging behaviour in baseline and maintenance phases decreased as her adaptive behaviour increased, however, there was no change during intervention.

**George.** During baseline, George engaged in 'Cooperative Play' on average for 20.00% of the steps in the task analysis, with a median of 10.00% and a range of 00.00% to 60.00%. His baseline data displayed variability with an ascending trend. During intervention, George demonstrated a rapid performance increase with a relatively stable trend. His average

performance increased to 94.60%, demonstrating a 74.60% skill acquisition. During the two maintenance phases (1 week and 2 months), George initially decreased in performance with an average of 62.00% in maintenance 1; however, he maintained his initial skills with an average of 94.60% in maintenance 2. As shown in Figure 2, challenging behaviour decreased as adaptive behaviour increased.

### **Social Validity**

Information was gathered from teachers regarding the VPM or VSM procedure, its application in the classroom or school, its effect on the students, and the feasibility of utilising this intervention in the future (Appendix T). Three reported that the VPM or VSM interventions were successful. However, one teacher (student assigned to VPM) noted that the video was only useful when the student was focussed. Teachers indicated that there were no disruptions to classroom routines or other students, and students seemed to enjoy watching the video. One teacher (student assigned to VSM) did not. Only one student assigned to VPM communicated with their teacher regarding the video. The four teachers reported they would use the intervention again and consider creating the videos themselves. Overall, there was little difference in the teacher reports of social validity for VPM and VSM.

### **Generalisation**

The end of the study the questionnaire (Appendix U) also included three questions about skill generalisation following the intervention. The teachers of students assigned to 'Cooperative Play' reported that skills learnt from VPM and VSM had generalised to other situations; one learning to wait patiently for their turn during class activities, the other "coping better" with not winning or getting something they wanted. Two teachers (of the students assigned to VPM) reported the skills had generalised to other settings, while the teachers of students assigned to VSM did not, however, this may be due to chance given the small number of participants. All

teachers recorded that the skills did not generalise to any other persons. Overall, there appeared to be little difference in the generalisation of skills for those assigned to VPM and VSM.

## **Discussion**

### **Summary**

The overarching aim of this study was to examine the effects of VPM and VSM on the adaptive behaviour of six students with ASD. The study included a diverse range of participants that varied in age, gender, level of functioning and ethnicity. Four of the six participants (two yoked pairs) completed all study phases. This study provided support for the development and use of VPM and VSM in educational contexts for a diverse group of participants. Results showed VPM was an effective intervention for teaching a functional skill and a social skill, while VSM was effective for teaching a social skill, but not a functional skill. Results regarding efficiency of skill acquisition were mixed. The findings from the current study were consistent with previous research that found both VPM and VSM interventions resulted in skill acquisition that was maintained (Buggey, 2012; Buggey et al., 2011; Burton et al., 2013; Morlock et al., 2015; Nikopoulos et al., 2009; Nikopoulos & Keenan, 2004; Nikopoulos & Keenan, 2007; Nikopoulos & Panagiotopoulou, 2015; Schatz et al., 2016; Sherer et al., 2001; Williamson et al., 2013).

This study also addressed challenging behaviour, predicting that as the student's performance on the target skill improved, their challenging behaviour would decline. Overall, the current results support findings of previous investigations, whereby challenging behaviour decreased as participants acquired more skills (Buggey, 2005; Nikopoulos et al., 2009; Nikopoulos & Panagiotopoulou, 2015; Schatz et al., 2016). Furthermore, VPM and VSM appeared to be equally efficacious for reducing challenging behaviour, suggesting both interventions may be useful for addressing this problem in students with ASD.

The four participants demonstrated generalisation of newly acquired skills across situations or settings. This is similar to findings of other VPM or VSM interventions (Burton et al., 2013; Nikopoulos et al., 2009; Nikopoulos & Keenan, 2004; Nikopoulos & Keenan, 2007; Nikopoulos & Panagiotopoulou, 2015; Reagon et al., 2006). Consistent with other studies (Boudreau & Harvey, 2013; Buggey, 2012; Buggey et al., 2011; Burton et al., 2013; Hart & Whalon, 2012; Morlock et al., 2015; Nikopoulos & Keenan, 2004; Schatz et al., 2016), all of the classroom teachers reported VPM and VSM to be a socially valid intervention that they would consider using in their classrooms.

### **Video Peer-Modelling Intervention**

The VPM intervention was successful for teaching Sam a functional skill, and Catherine a social skill. This is similar to previous research where VPM was effective in teaching a functional skill (word recognition and pronunciation) to adolescents with ASD (Morlock et al., 2015) and reciprocal, pretend play skills to children with ASD (Nikopoulos & Keenan, 2007). However, Catherine did not achieve efficient skill acquisition and showed considerable variation in the number of intervals engaged in 'Cooperative Play', ranging from 3 to 13, including two sessions where she did not engage at all. This is likely due to attentional issues, as highlighted in the FBA. Anecdotally, Catherine's teacher reported she had shown great improvement in regards to the amount of time she would engage in these types of games. The benefit of such improvement is that Catherine has greater opportunity to engage and learn new skills when she is able to be attentive towards activities.

Sam's skill improvement supports claims that VPM can be equally effective as VSM (Bellini & Akullian, 2007; McCoy & Hermansen, 2007). Following the beginning of the intervention, Sam demonstrated rapid behaviour change that was maintained over time. During baseline, he experienced problems with step 6 on the task analysis (giving the mail bag to the

office administrator). Sometimes he appeared confident, completing the step and continuing with the task, while in other sessions he appeared embarrassed and forgot what to do, the session ending at that point. Sam's teacher aide suggested that his abilities may have been impacted by who was in the office (i.e., other students) and how he was feeling that day. Following the introduction of the video, Sam completed step 6 on all occasions thereafter. His teacher reported that Sam's confidence had grown while taking part in the study. During session 14, the researcher recorded a note that Sam had approached the administrator's desk (step 5) and had seen she was on the phone. Sam had waved and waited until she had finished on the phone before saying "Hi". Sam's teacher aide commented that this behavioural inhibition required a high level of awareness that he had not seen Sam display before. Furthermore, unlike other participants in the study, Sam's daily circumstances such as mood and changes in his environment did not appear to influence his performance of the task analysis once treatment began. At times, Sam was displaying challenging behaviour when the researcher arrived in his classroom, however, once he began 'Mail Collection', these behaviours ceased and he became very focussed on the task at hand. Sam's teacher aide reported that Sam's ability to avoid distractions during 'Mail Collection' had improved significantly. Mechanisms for this change may include enjoyment of the mail collection task, increased independence and subsequent increases in confidence and self-efficacy.

### **Video Self-Modelling Intervention**

VSM appeared successful for teaching George a social skill, however, Luke experienced minimal improvement in learning a functional skill. Interestingly, Luke performed significantly better on two sessions during maintenance than he had on any other days, despite not completing the sequence at all during the 1 week and 2 month breaks. Furthermore, on two sessions where data collection had ceased after step 3, Luke had seen the school office on his way back to the



classroom, entered the office and went on to complete the majority of the steps in the task analysis correctly. This was not recorded as data collection had ceased for that session; however, it does demonstrate that despite Luke appearing to struggle to retrieve the information, it had been encoded and stored. People with ASD often develop cued, rote and procedural memory exceptionally well, memories being cued months or years later where nothing is forgotten (Carr, Linehan, O'Reilly, Walsh, & McEvoy, 2016). Luke's elevated performance during two of the maintenance sessions demonstrates that he was able to retain the memory of skills presented in the video over time.

While individuals with ASD have strengths processing and storing visual information (Hodgdon, 1995), individuals with Down syndrome struggle with long-term memory of visual information and poorer recall than recognition abilities (Jarrold, Baddeley, & Phillips, 2007). One explanation for Luke's increased performance during the two maintenance sessions is that the researcher's presence served as a prompt for Luke's memory of the task. Because learning occurs in part by associations, one of the best ways to retrieve a memory is to come across something in our environment that is somehow related (Eysenck & Keane, 2015). Thus, what we remember reflects what we encoded and what activations we associated at the time of encoding. It is possible that when Luke encoded the information regarding how to collect the mail, the researcher served as a prompt for Luke to engage in the task.

Bellini and Akullian (2007) note that motivation could be one of the factors contributing to the success of VPM and VSM interventions. During video production, Luke was unable to knock on the principals door or hand the mail bag to the office administrator; the researcher using technology to produce a video that made it appear as if he did possess these skills. During the intervention, Luke laughed and smiled when he saw the video footage of himself 'knocking' on the door and handing over the mail bag. When he finished watching the video and was given

the instruction to collect the mail, he went on to complete these steps. This demonstrated that while Luke was unable to string the sequence of steps together to complete 'Mail Collection' consistently, learning did occur with new skills being acquired rapidly (as per feedforward VSM described by Dowrick (2012a)).

Another important point is George's results declining during the initial round of maintenance. George's classroom teacher reported that he struggles with the demands of school near the end of each term and consequently, presents with more challenging behaviour during this time. Thus, when the second round of maintenance was conducted around mid-term, his results returned to the same scores as the intervention phase. Also of interest, was the dramatic change and increase in George's ability to deal with loss (a skill the FBA determined as difficult for George) after the VSM intervention was introduced. His self-modelling video included an image and audio of George losing to his peer, staying seated and saying "sometimes we lose, that's okay". This intervention was successful, with George demonstrating the ability to deal with loss once the video was introduced. Initially this skill was generalised; however, by the 4th session, this effect appeared to decrease and George stopped saying this phrase when he lost. The newly learnt skill of staying calm and seated after losing had remained however. This is possibly because his playing peer was modelling this behaviour but not repeating the phrase. These findings challenge Nikopoulos and Panagiotopoulou's (2015) claim that challenging behaviour needs to be addressed prior to VSM intervention. The present study demonstrates that if incorporated into the intervention, challenging behaviour can be reduced in the context of VSM.

### **Comparing Video Peer-Modelling and Video Self-Modelling**

Results of the present study support Bellini and Akullian (2007) and McCoy and Hermansen (2007) reviews that claimed VPM and VSM are equally effective intervention modalities for teaching adaptive behaviour to individuals diagnosed with ASD. While the present

study suggests VPM is slightly more effective than VSM, it is more likely that this is a chance factor given the small number of participants rather than a true reflection of the power of the intervention modalities. Dowrick's (2012a) theory suggests that all observational learning contributes to an internal process of self-modelling. This may explain the success of Sam and Catherine, who each observed a peer engaging in the target skill. They were able to perform all components of the target skill, suggesting they were able to internalise the images in the video to reproduce these skills in their own environments. In contrast, Luke (assigned to VSM), achieved minimal skill acquisition. In line with Dowrick's theory, it is possible that the skills in the self-modelling video were beyond his current abilities, meaning he was unable to imagine himself performing them. While the FBA established Luke's capability of performing each separate component of the target skill, the complexity of stringing the sequence of those behaviours together may have been too difficult. This may explain why Luke was able to perform new skills after intervention (e.g., knocking on the principal's door and handing over the mail bag) but not in the correct order.

Dowrick (2012a) proposes that rapid skill acquisition may be linked to significant changes in relation to the individual's self-efficacy. This expands Bandura's (1997) theory that seeing the self accurately performing a skill, strengthens one's belief in their capabilities. Sam (VPM) and George (VSM) both experienced efficient behaviour change, providing support for the theory that observing a peer may enhance self-efficacy as much as observing oneself performing the task (Dowrick, 2012a). The importance of self-efficacy and feelings of competence are important motivating factors for learning and performing new skills (Buggey et al., 2011; Dowrick, 2012a; McCoy & Hermansen, 2007). The current study provides further support for this notion as those who developed the target skills had a more positive attitude towards engaging in the task and gained confidence throughout the intervention.

Anecdotal observations support previous research that suggests viewing VM clips can be highly enjoyable for individuals with ASD, leading to increased motivation to watch the video and perform the modelled behaviour. Attention to the target behaviour is one of the necessary conditions of effective modelling procedures (Dowrick, 2012b). Sam and George appeared to enjoy watching their videos and showed more efficient and effective skill acquisition, suggesting they were motivated to learn the target skill. Interestingly, these two participants watched their video the least, yet were able to attend to the video without prompting, for the entirety of the clip. This is perhaps due to the depiction of positive behaviours and the potential for this to increase self-efficacy and subsequent attention given by the observer (Bandura, 1997; Dowrick, 1999). On the other hand, Catherine and Luke experienced difficulty attending to the video and needed prompting to continue watching. Luke struggled the most, tending to watch the video for approximately 30 seconds before his attention lapsed, after which he required a prompt every 10-20 seconds to continue watching. Potentially, Luke's variable and/or limited interest in the video may be a key factor in his lack of skill acquisition with the VSM intervention overall.

The treatment appeared successful in reducing challenging behaviour that had various functions (e.g., social attention, escape or avoidance, sensory stimulation, tangibles or activities) for three participants; however, was unsuccessful for one participant. Cihak et al. (2010) comment that the function of behaviour may be a mediating factor in the effectiveness of VM interventions. In the present study, it is queried whether the intensity of these functional desires and/or whether the intervention provides an appropriate replacement for these behaviours is more important. For example, Luke who was assigned to 'Mail Collection' continued to engage in challenging behaviour with a sensory function throughout the study (i.e., throwing leaves, bark and other debris over his head). While the target skill did provide some sensory function (Luke

tended to swing the mail bag in circles while he walked), it may not have been a viable replacement for the sensory stimulation he required.

The FBA also demonstrated that Catherine and Luke were lower functioning than the others in the study. The Vineland-II indicated Luke had ‘severe deficits’ in communication and daily living skills and a ‘moderate deficit’ in socialisation, while Catherine scored in the ‘Low’ range across all domains and had limited expressive speech, using 1-2 word phrases.

Interestingly, these two participants showed the least amount of improvement with the VPM and VSM interventions, prompting questions regarding levels of functioning and the type of intervention they require. Perhaps Luke and Catherine would have benefited from further support such as prompting or social stories.

It is important to acknowledge that working with children and adolescents with ASD presents a unique set of challenges in itself. Three of the four participant’s teachers noted that their students struggled near the end of term, engagement levels decreasing and challenging behaviour increasing. Given the difficulties an individual with ASD experiences, one assumes the classroom environment is cognitively and emotionally taxing for this group, meaning they become weary near the end of term and experience more difficulty regulating the self. In the current study, participants’ mood and affect appeared to fluctuate considerably between days. Participants’ were also occasionally unwell or experiencing changes or difficulties in their home environment that was having an impact on their behaviour at school. For some participants, these factors appeared to influence their performance of the target behaviour, while for others, it did not.

As mentioned by McCoy and Hermansen (2007), finding suitable models can pose legal and ethical issues as confidentiality must be obtained and ensured throughout the process. When the models are peers or self, sensitivity to when, where and how the video is used is paramount.

There are also a number of technical issues that generate challenges. Creating a video of unedited VM is relatively straightforward, however editing footage can be a complex and time-consuming process for the inexperienced teacher or technician. Certainly in the present study, producing the self-modelling videos took some time. VSM requires some level of acquisition of the target skill in order to capture the required footage, this presenting difficulty for skills the student does not yet possess. Gaining the child's cooperation to engage in the desired behaviours for videotaping can be time-consuming (Bellini & Akullian, 2007; Sherer et al., 2001). The footage of the student displaying exemplary behaviour is often gathered over time through role-play or encouraging the student to imitate the desired behaviours (Buggey, Toombs, Gardener, & Cervetti, 1999; Delano, 2007). Dowrick (2012a) notes that using a peer model has practical advantages regarding ease of demonstrating the desired behaviours. A peer model can be selected based on already being an expert in the target behaviour, resulting in little to no editing. The disadvantage however, is the variability with which the observer can imagine themselves performing the target behaviours while watching the peer-modelling video. He comments that because of an individual's unique features, abilities, disabilities or self-perceptions, a suitable peer is not always available and thus, a self-model is the only option. Self-modelling may also provide a more powerful model for those students who particularly enjoy watching a video of themselves.

Overall, while there is some evidence to suggest that the type of model may impact on participant's success, the majority of research provides explanations that points to other factors contributing to the current studies results. Circumstantial factors pertaining to the individual (e.g., motivation, self-efficacy), the specific behaviour being taught, and the abilities of the individual, appeared to have the biggest impact on participant success. Thus, the results of the present study support the comments of Dowrick (2012a) that seeking the superiority of one

method over another is fruitless. Rather, one must establish the unique characteristics of the individual and specific circumstances in order to determine the most suitable VM intervention in any given situation.

### **Implications**

The current findings suggest VPM and VSM may be effective options for educators to improve adaptive behaviour and address challenging behaviour of students with ASD. If a self-modelling video cannot be easily produced, a video of a peer modelling appropriate behaviour may be equally effective. Specifically, the VPM and VSM interventions allowed students to independently receive instruction that demonstrated how to collect the mail from the school office or engage in cooperative play, with adult assistance. The results, therefore, have implications for educators in regards to innovative methods that can be implemented without high levels of supervision. VPM and VSM may allow multiple students to receive assistance from the same video. Additionally, these interventions are often less labour-intensive than many other instructional procedures. It is possible that these techniques could be used as a form of self-management intervention that is effective and easy for practitioners to implement. This could potentially lead to education personnel having more time for other aspects of their role. Given increased accessibility to hand-held technology and applications that can be used to produce custom videos, VPM and VSM is a cost-effective method of teaching adaptive behaviour that assists in greater independence for people with ASD (Campbell et al., 2015). The current results warrant further research to determine an evidence base of VPM and VSM to increase adaptive behaviour and reduce challenging behaviour of children and adolescents with ASD.

This study was designed to evaluate the effect of VPM and VSM on the acquisition of new skills as no other intervention methods were utilised. Educators might assume teaching novel skills requires antecedent prompts and error correction to induce accurate and correct

responding, along with reinforcers to maintain the rate of occurrence. However, this study prompted the acquisition of skills in the absence of these methods, inferring skill development occurred as a result of the watching the videos.

Results of the current study extend previous VPM and VSM research by including a FBA pre-intervention, this providing preliminary insight into the function of study participants' challenging behaviour. Clearly, much further research is needed to establish the hypothesised role of specific behaviours; however, the results suggest the intensity of these functional desires may be important to consider when choosing more appropriate behaviours to replace them with. Importantly, the current study addresses the need to extend the literature in the use of VPM and VSM with adolescent students. The results of the study can be used to draw implications for delivering instruction to students of varied ages, abilities, and demographic backgrounds, a need outlined by Burton et al. (2013). Understanding how VPM and VSM impacts on adolescent students with varied abilities, and in different contexts, will help teachers support these students in mainstream classrooms where time and resources are limited.

### **Limitations**

**Design and Internal Validity.** Although the present study demonstrates tentative support for the use of VPM and VSM, there are a number of limitations that should be considered when analysing the data and discussing implications. Similar to other single-subject designs, a small sample size was examined. In this study, only 4 students participated for all phases of data collection. With this in mind, conclusions must be interpreted within the context of this study. Further research is needed to verify these results and its external validity. Furthermore, time restrictions in the current study meant the longest achievable maintenance measure was two months. Thus, evaluations across longer periods of time are needed to determine how long the skills are maintained.



While this study provides an ecologically valid representation of effects, this approach presents a number of limitations in itself. First, it is not possible to control all extraneous variables. In each session, there were different people in the environment, and the number of people around differed significantly as well. Furthermore, others would sometimes interact with participants during data collection, sometimes appearing to impact on the student's opportunity or ability to perform the given task. However, it should be recognised that this is part of the child or adolescent's natural experiences when engaging in tasks at school; therefore, part of their learning should be centred around ignoring distractions, or re-engaging in the task at hand post interaction.

**External Validity and Generalisability.** Catherine's playing peer in the 'Cooperative Play' condition was representative of her peers in that he also had a disability. This perhaps had an impact Catherine's behaviour during the games. Had a typically developing peer been available, Catherine may have engaged in higher rates of 'Cooperative Play' due to modelling of desirable behaviour during play. On the other hand, it is important to note that these peers represent a real-life sample and the subsequent behaviour they present during classroom activities. In the current study, a valid measure of generalisation was not utilised; thus, it is difficult to ascertain whether the skills learnt would carry over to other areas of the individuals functioning. Incorporating a valid generalisation measure is suggested. Additionally, longer maintenance periods would assist in establishing the effectiveness of these interventions over time. The method for calculating effect size (PEM) is a relatively new approach. Its limitations lie in the possibility of misinterpreting the meaning of percentage calculated and its lack of sensitivity to the magnitude of data points above the median line (Ma, 2006).

**Measurement.** The researcher's presence across all observation sessions may have served as a prompt for participants to engage in the target behaviours. Although efforts were made to desensitise participants to the researcher's presence, this cannot be eliminated as a possible confound. Further, despite efforts to ensure the behaviours selected were ability appropriate, some components may have been missed in the FBA that meant aspects were too complicated for participants. Finally, the study was conducted throughout the school year and therefore the stages of term were different for each yoked pair. Moreover, student absences due to illness or other commitments meant yoked pair's data were not always collected on the same days.

### **Future Directions**

The present study findings suggest there are positive outcomes when using VPM and VSM to increase adaptive behaviour of students with ASD. Future research could examine the benefit of switching the procedure, so that participants making minimal progress can be exposed to the alternate treatment condition (VPM or VSM). At this stage, questions around how to establish which students require specific intervention types remain; given that some gain greater benefits from having the closest model to the self (VSM), whilst for others, using a peer model may be equally effective. In agreement with Dowrick (2012a), further investigation is needed to establish the conditions under which a particular model is more appropriate.

It is questionable whether VPM and VSM interventions are suitable for lower functioning ASD individuals. In a review by Shukla-Mehta et al. (2010) which examined the effect of video instruction on social and communication training for children with ASD, only four studies were reported to use VM alone. The potential effects of instructional procedures (i.e., prompting, error correction, and reinforcers) needs to be established to determine whether VM alone or VM with other components is more effective. Luke's teacher felt he would be more successful had he been

prompted throughout the mail collection task. Additional instructional methods such as prompting could be included in the treatment phase for students who make limited progress after three data points. Further, Dowrick (2012a) notes that motivation plays a central role in the success of these interventions. Thus, it is possible that rewards (e.g., social reinforcement) were not motivating enough for Luke and Catherine to achieve the targeted outcome.

Given the limited VPM and VSM research targeting challenging behaviour in ASD, there remains a huge gap in the knowledge base. Nikopoulos et al. (2009) assessed instructional stimulus control using VSM and reported efficacy in children with lower baseline levels of disruptive behaviours and more developed imitation skills. In the present study, the two students with higher levels of disruptive behaviour were removed from the study before the intervention phase. Research examining whether VPM and VSM helps decrease more intensive disruptive behaviour is necessary.

In general, VM research needs to be replicated with children and adolescents of various ages, abilities and demographic backgrounds in order to establish the best use of these interventions. This will give a clearer indication of treatment effectiveness, efficacy, generalisation, maintenance, social validity and its influence on disruptive behaviour in the school environment. In the current study, only two adaptive skills were targeted in very specific areas; thus, future research should be applied to pertinent skills that will assist an individual with ASD in their day-to-day functioning at home, school and in the community. There is a lack of VM research for adolescents with ASD; therefore, it is recommended that more studies focus on this group. This will help establish strategies for teaching adolescents as they increasingly access education through mainstream schools.

## **Conclusion**

The current study provides further support for the efficacy of feedforward VSM and VPM in the acquisition and maintenance of new adaptive behaviour in children and adolescents with ASD. Since the introduction of the Special Education 2000 policies, there has been a large increase in the number of students with ASD in mainstream schools. Alongside an increase in their participation in the core curriculum areas, schools have increased their focus on individual strengths, and fostering independence of these students. These characteristics are fundamental for building self-confidence and self-esteem, and for reducing the need for support in the future. In the current study, VPM and VSM were shown to be effective teaching methods for three of the four participants who completed the study. Furthermore, these interventions may be an efficacious method of decreasing challenging behaviour, and thereby increasing learning opportunities for students, whilst permitting teachers to focus on academic instruction. In most cases, it appears that VPM and VSM are equally effective and efficient, indicating that service providers have an option of choosing a model based on the ease of delivery. Clearly, more systematic replications of the two modes of VM are required, particularly with adolescent participants. The challenges of data collection in the current study highlight the complexities of working with this unique group of individuals. It reflects the multitude of difficulties students with ASD encounter every day, and the impact this has on their peers and the educational staff that work alongside them.

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## Appendix A



## HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson  
Telephone: +64 03 369 4588, Extn 94588  
Email: [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)

Ref: 2016/36/ERHEC Amendment 2

9 May 2017

Julie Cox  
Psychology  
UNIVERSITY OF CANTERBURY

Dear Julie

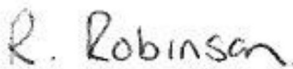
Thank you for your request for an amendment to your research proposal “The Effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder” as outlined in your email dated 4<sup>th</sup> May 2017. I am pleased to advise that this amendment has been considered and approved by the Educational Research Human Ethics Committee.

Please note that should circumstances relevant to this current application change you are required to reapply for ethical approval.

If you have any questions regarding this approval, please advise.

We wish you well for your continuing research.

Yours sincerely

pp 

Patrick Shepherd  
**Chair**  
**Educational Research Human Ethics Committee**

*Please note that ethical approval relates only to the ethical elements of the relationship between the researcher, research participants and other stakeholders. The granting of approval by the Educational Research Human Ethics Committee should not be interpreted as comment on the methodology, legality, value or any other matters relating to this research. F E S*



## Appendix B

Julie Cox  
Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



### **An invitation to participate in a study investigating the effects of video modelling and video self-modelling on adaptive behaviour in children with autism spectrum disorder.**

I am conducting research in this area as part of my Masters in Psychology thesis. I am currently recruiting children and adolescents to participate in my study.

To participate the child or adolescent will have;

- A desire to learn a new adaptive behaviour (e.g., requesting a break, washing hands)
- A diagnosis of autism spectrum disorder (ASD)
- The ability to attend (watch in one sitting without moving away or looking away) to a 2-3 minute video
- Be aged between 5-18 years
- Attend a public or specialized primary or secondary school in Christchurch city.

If you would like to know more about my study please refer to the information pack provided and contact myself or one of my supervisors, Dr Jacki Henderson ([jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz)) and Dr Dean Sutherland ([dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz)), should you have any questions. Thank you for your consideration.

Sincerely,

Julie Cox

## Appendix C

Julie Cox  
Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Information Sheet for the Principal

My name is Julie Cox and I am a postgraduate student from the University of Canterbury. As part of my thesis study towards a Master of Arts in Psychology, I will be studying video modelling and video self-modelling on adaptive behaviour in children with autism spectrum disorder. Video modelling is a technique based on observational learning in which individuals view back edited footages of their behaviour (video self-modelling) or others behaviour (video modelling), which encourages them to model or perform this target behaviour.

The project will involve:

Your support in identifying students who may be interested in taking part in the study and passing on the appropriate information (provided in a pack) to their classroom teachers and parents/caregivers.

Gaining consent from you, the Board of Trustees, classroom teachers, and parents/caregivers, in addition to assent from the student.

A functional behaviour assessment will be used to determine the specific behaviour to target, how this will be done and how this will be recorded. I envisage that up to 6 students will be involved in the study from two or more schools, although, more students may be initially screened to determine their suitability.

The initial screening process will involve a phone call or in person meeting with the parent/caregiver, this will take about 30 minutes.

If the child volunteers to participate in the study and is then selected, the researcher will meet with the child's classroom teacher to conduct an assessment of the child's behaviour with the Vineland Adaptive Behaviour Scales, teacher rating form. Following this, the child's classroom teacher will be asked to engage in an informal interview with the researcher regarding the child's educational support history and difficulties within the target adaptive behaviour. This will take about 50 minutes.

The children will be paired with another participant of a similar age and randomly assigned to video modelling in which they will view a video of their matched pair, or video self-modelling in which they will view a video of themselves.

The intervention will occur as follows:

Baseline (1-3 weeks): I (the researcher) will collect daily data in the classroom or during break times on the student's behaviour in a particular area (e.g., hand washing or requesting a break). This will take up to a maximum of 1 hour each day and will be done either in person or using tiny cameras that are attached to the student's clothing. The use of tiny cameras will be dependent on the schools policy, if the school does not allow for this filming to occur, the tiny cameras will not be used. If the school policy does allow for the use of tiny cameras, the student will be given the choice of wearing the tiny camera, if they choose not to wear it, the researcher will collect the data in person. Participants will be randomly assigned to baseline lengths. Some participants will have one week of baseline data collected while others will have baseline data collected for either 2 or 3 weeks.

Video Production (will occur during baseline): the three students who are assigned to the video self-modelling condition will work with the researcher to create a 2-3 minute video that will be edited to show the student engaging in the appropriate target behaviours. The filming process will take place at the school, and will be arranged with the classroom teacher. Filming will occur over 3 days and take a maximum of 30 minutes each time.

Intervention (1 week): the researcher will continue to record daily data for a maximum of 1 hour each day. On each day, the researcher and student will also watch the video that was produced from the previous weeks filming. If the student is assigned to video self-modelling, they will watch a video of themselves. If the student is assigned to video modelling, they will watch a video of someone else, that is, they will watch their peer's video self-model.

Maintenance (1 week): the researcher will continue to record daily data for a maximum of 1 hour each day. The participant's teacher will be asked to use the video from now onwards, for as long as required.

Maintenance (1 week): two months post intervention, the researcher will record maintenance data daily over one week, for a maximum of 1 hour each day.

As a follow-up to this research, the teacher will be asked to complete a short study evaluation questionnaire about how they perceived the intervention and its effectiveness. This will take about 5 minutes. At completion of the study, the student will receive a \$20 Westfield voucher as an acknowledgement of their participation, and a copy of the video (either of themselves or their peer) on a USB stick. Students, parents and teachers are advised that no copies of this video should be made, and it should not be put on the internet.

Participation in this study is voluntary, and the teachers, students and their parents/caregivers have the right to withdraw without penalty, including the removal of information, providing it is practicably achievable.

The results of the project may be published and/or presented at a conference but please be assured that any identifying information about the teachers, students, families, school, or any other professionals who work at the school, will not be disclosed. To ensure confidentiality, all parties involved will be given a code name throughout the study to protect their identity. Data will be securely stored in a locked filing cabinet at the University of Canterbury, and only myself and my two supervisors will have access to this data. The data will be destroyed after a period of 5 years. A thesis is a public document and will be available through the UC Library. A summary of results will be made available to you at the end of the study.

This project is being carried out as a requirement for a Master of Arts in Psychology under the supervision of Dr Jacki Henderson who can be contacted at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) and Dr Dean Sutherland who can be contacted at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz). In addition to myself ([julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)), they will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Education Research Human Ethics Committee, and participants should address any complaints to The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch 8140, or email [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz).

If you agree for your school to participate in this study, please complete the attached consent form and post it to me in the envelope provided by (2/12/16). Thank you for your consideration.

Sincerely,

Julie Cox

## Appendix D

Julie Cox  
Department of Psychology  
64 3 364 2987 ex. 3620  
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19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Information Sheet for the Board of Trustees

My name is Julie Cox and I am a postgraduate student from the University of Canterbury. As part of my thesis study towards a Master of Arts in Psychology, I will be studying video modelling and video self-modelling on adaptive behaviour in children with autism spectrum disorder. Video modelling is a technique based on observational learning in which individuals view back edited footages of their behaviour (video self-modelling) or others behaviour (video modelling), which encourages them to model or perform this target behaviour.

The project will involve:

The principals support in identifying students who may be interested in taking part in the study and passing on the appropriate information (provided in a pack) to their classroom teachers and parents/caregivers.

Gaining consent from you, the school principal, classroom teachers, and parents/caregivers, in addition to assent from the student.

A functional behaviour assessment will be used to determine the specific behaviour to target, how this will be done and how this will be recorded. I envisage that up to 6 students will be involved in the study from two or more schools, although, more students may be initially screened to determine their suitability.

The initial screening process will involve a phone call or in person meeting with the parent/caregiver, this will take about 30 minutes.

If the child volunteers to participate in the study and is then selected, the researcher will meet with the child's classroom teacher to conduct an assessment of the child's behaviour with the Vineland Adaptive Behaviour Scales, teacher rating form. Following this, the child's classroom teacher will be asked to engage in an informal interview with the researcher regarding the child's educational support history and difficulties within the target adaptive behaviour. This will take about 50 minutes.

The children will be paired with another participant of a similar age and randomly assigned to video modelling in which they will view a video of their matched pair, or video self-modelling in which they will view a video of themselves.

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Intervention (1 week): the researcher will continue to record daily data for a maximum of 1 hour each day. On each day, the researcher and student will also watch the video that was produced from the previous weeks filming. If the student is assigned to video self-modelling, they will watch a video of themselves. If the student is assigned to video modelling, they will watch a video of someone else, that is, they will watch their peer's video self-model.

Maintenance (1 week): the researcher will continue to record daily data for a maximum of 1 hour each day. The participant's teacher will be asked to use the video from now onwards, for as long as required.

Maintenance (1 week): two months post intervention, the researcher will record maintenance data daily over one week, for a maximum of 1 hour each day.

As a follow-up to this research, the teacher will be asked to complete a short study evaluation questionnaire about how they perceived the intervention and its effectiveness. This will take about 5 minutes. At completion of the study, the student will receive a \$20 Westfield voucher as an acknowledgement of their participation and a copy of the video (either of themselves or their peer) on a USB stick. Students, parents and teachers are advised that no copies of this video should be made, and it should not be put on the internet.

Participation in this study is voluntary, and the teachers, students and their parents/caregivers have the right to withdraw without penalty, including the removal of information, providing it is practicably achievable.

The results of the project may be published and/or presented at a conference but please be assured that any identifying information about the teachers, students, families, school, or any other professionals who work at the school, will not be disclosed. To ensure confidentiality, all parties involved will be given a code name throughout the study which protects their identity. Data will be securely stored in a locked filing cabinet at the University of Canterbury, and only myself and my two supervisors will have access to this data. The data will be destroyed after a period of 5 years. A thesis is a public document and will be available through the UC Library. A summary of results will be made available to you at the end of the study.

This project is being carried out as a requirement for a Master of Arts in Psychology under the supervision of Dr Jacki Henderson who can be contacted at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) and Dr Dean Sutherland who can be contacted at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz). In addition to myself ([julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)), they will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Education Research Human Ethics Committee, and participants should address any complaints to The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch 8140, or email [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz).

If you agree for your school to participate in this study, please complete the attached consent form and post it to me in the envelope provided by (2/12/16). Thank you for your consideration.

Sincerely,

Julie Cox

## Appendix E

Julie Cox  
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19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Information Sheet for the Teacher

My name is Julie Cox and I am a postgraduate student from the University of Canterbury. I am studying the effects of video modelling and video self-modelling on adaptive behaviour in children with autism spectrum disorder. I am inviting you, the student and the student's parent/caregiver to participate in my study.

The project will involve:

- Gaining consent from you, the school principal, the Board of Trustees, and parents/caregivers, in addition to assent from the student.
- A functional behaviour assessment will be used to determine the specific behaviour to target, how this will be done and how this will be recorded. I envisage that up to 6 students will be involved in the study from two or more schools, although, more students may be initially screened to determine their suitability.
- The initial screening process will involve a phone call to the parent/caregiver, this will take about 30 minutes.
- If you agree to take part in the study, you will be asked to meet with myself to conduct an assessment of the child's behaviour with the Vineland Adaptive Behaviour Scales, teacher rating form. Following this, you will be asked to engage in an informal interview with the researcher regarding the child's educational support history and difficulties within the target adaptive behaviour. This will take about 50 minutes.
- The children will be paired with another participant of a similar age and randomly assigned to video modelling in which they will view the video of their matched pair, or video self-modelling in which they will view a video of themselves.

If the student is assigned to video self-modelling, they will be asked to take part in developing a short video which will show them working their way through steps required to successfully complete the target skill. The final video will be viewed by themselves, and their matched peer. The filming will take place in the student's classroom, during school hours.



The intervention will occur as follows:

Baseline (1-3 weeks): I (the researcher) will collect daily data in the classroom or during break times on the student's behaviour in a particular area (e.g., hand washing or requesting a break). This will take up to a maximum of 1 hour each day and will be done either in person or using tiny cameras that are attached to the student's clothing. The use of tiny cameras will be dependent on the school's policy, if the school does not allow for this filming to occur, the tiny cameras will not be used. If the school policy does allow for the use of tiny cameras, the student will be given the choice of wearing the tiny camera, if they choose not to wear it, the researcher will collect the data in person. Participants will be randomly assigned to baseline lengths. Some participants will have one week of baseline data collected while others will have baseline data collected for either 2 or 3 weeks.

Video Production (will occur during baseline): the three students who are assigned to the video self-modelling condition will work with the researcher to create a 2-3 minute video that will be edited to show the student engaging in the appropriate target behaviours. The filming process will take place at the school, and will be arranged with the classroom teacher. Filming will occur over 3 days and take a maximum of 30 minutes each time.

Intervention (1 week): the researcher will continue to record daily data for a maximum of 1 hour each day. On each day, the researcher and student will also watch the video that was produced from the previous weeks filming. If the student is assigned to video self-modelling, they will watch a video of themselves. If the student is assigned to video modelling, they will watch a video of someone else, that is, they will watch their peer's video self-model.

Maintenance (1 week): the researcher will continue to record daily data for a maximum of 1 hour each day. The participant's teacher will be asked to use the video from now onwards, for as long as required.

Maintenance (1 week): two months post intervention, the researcher will record maintenance data daily over one week, for a maximum of 1 hour each day.

As a follow-up to this research, you will be asked to complete a short study evaluation questionnaire about how you perceived the intervention and its effectiveness. This will take about 5 minutes. At completion of the study, the student will receive a \$20 Westfield voucher as an acknowledgement of their participation and a copy of the video (either of themselves or their peer) on a USB stick. It is requested that no copies of this video are made, and it is not put on the internet.

Participation in this study is voluntary, and the teachers, students and their parents/caregivers have the right to withdraw without penalty, including the removal of information, providing it is practicably achievable.

The results of the project may be published and/or presented at a conference but please be assured that any identifying information about the teachers, students, families, school, or any other professionals who work at the school, will not be disclosed. To ensure confidentiality, all parties involved will be given a code name throughout the study which protects their identity.

Data will be securely stored in a locked filing cabinet at the University of Canterbury, and only myself and my two supervisors will have access to this data. The data will be destroyed after a period of 5 years. A thesis is a public document and will be available through the UC Library. A summary of results will be made available to you at the end of the study.

This project is being carried out as a requirement for a Master of Arts in Psychology under the supervision of Dr Jacki Henderson who can be contacted at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) and Dr Dean Sutherland who can be contacted at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz). In addition to myself ([julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)), they will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Education Research Human Ethics Committee, and participants should address any complaints to The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch 8140, or email [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz).

If you agree for your school to participate in this study, please complete the attached consent form and post it to me in the envelope provided by (30/09/16). Thank you for your consideration.

Sincerely,

Julie Cox

## Appendix F

Julie Cox  
Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Information Sheet for the Parent/Caregiver

My name is Julie Cox and I am a postgraduate student from the University of Canterbury. I am studying the effects of video modelling and video self-modelling on adaptive behaviour in children with autism spectrum disorder. I am inviting you, your child and your child's teacher to participate in my study.

If you choose to take part in the study, this will involve completing a 30 minute phone interview in which I will gather information about your child and any difficulties they have at school. Notes will be taken during this interview and you will have the opportunity to read the notes and make any amendments immediately after the interview via email.

If your child is selected to take part in the study, the child's classroom teacher will be asked to engage in an informal interview with the researcher regarding the child's educational support history and difficulties. Immediately following this, I will administer an adaptive behavior scale questionnaire to the child's classroom teacher. This will take around 50 minutes. The information will be used to decide on a specific skill to teach your child.

It is important to note that your child will be involved in a study and your child's peers will observe this. Your child will be paired with another participant of a similar age and randomly assigned to video modelling in which they will view the video of their matched pair, or video self-modelling in which they will view a video of themselves.

If your child is assigned to video self-modelling, they will be asked to take part in developing a short video which will show them working their way through steps required to successfully complete a target skill. This footage will be edited to make a final video that will be viewed by themselves, and their matched peer. The filming will take place in the child's school, during school hours. This will take about 30 minutes each day for 3 days.

The intervention will occur as follows:

**Baseline (1-3 weeks):** I (the researcher) will collect daily data in the classroom or during break times on the student's behaviour in a particular area (e.g., hand washing or requesting a break). This will take up to a maximum of 1 hour each day and will be done either in person or using tiny cameras that are attached to the student's clothing. . The use of tiny cameras will be dependent on the schools policy, if the school does not allow for this filming to occur, the tiny cameras will not be used. If the school policy does allow for the use of tiny cameras, the student will be given the choice of wearing the tiny camera, if they choose not to wear it, the researcher will collect the data in person. Participants will be randomly assigned to baseline lengths. Some participants will have one week of baseline data collected while others will have baseline data collected for either 2 or 3 weeks.

**Video Production (will occur during baseline):** the three students who are assigned to the video self-modelling condition will work with the researcher to create a 2-3 minute video that will be edited to show the student engaging in the appropriate target behaviours. The filming process will take place at the school, and will be arranged with the classroom teacher. Filming will occur over 3 days and take a maximum of 30 minutes each time.

**Intervention (1 week):** the researcher will continue to record daily data for a maximum of 1 hour each day. On each day, the researcher and student will also watch the video that was produced from the previous weeks filming. If the student is assigned to video self-modelling, they will watch a video of themselves. If the student is assigned to video modelling, they will watch a video of someone else, that is, they will watch their peer's video self-model.

**Maintenance (1 week):** the researcher will continue to record daily data for a maximum of 1 hour each day. The participant's teacher will be asked to use the video from now onwards, for as long as required.

**Maintenance (1 week):** two months post intervention, the researcher will record maintenance data daily over one week, for a maximum of 1 hour each day.

As a follow-up to this research, you and your child's teacher will be asked to complete a short study evaluation questionnaire about how you perceived the intervention and its effectiveness. This will take about 5 minutes. At completion of the study, the student will receive a \$20 Westfield voucher as an acknowledgement of their participation and a copy of the video (either of themselves or their peer) on a USB stick. It is requested that no copies of this video are made, and it is not put on the internet.

Participation in this study is voluntary, and the teachers, students and their parents/caregivers have the right to withdraw without penalty, including the removal of information, providing it is practicably achievable.

The results of the project may be published and/or presented at a conference but please be assured that any identifying information about teachers, students, families, school, or any other professionals who work at the school, will not be disclosed. To ensure confidentiality, all parties

involved will be given a code name throughout the study which protects their identity. Data will be securely stored in a locked filing cabinet at the University of Canterbury, and only myself and my two supervisors will have access to this data. The data will be destroyed after a period of 5 years. A thesis is a public document and will be available through the UC Library. A summary of results will be made available to you at the end of the study.

This project is being carried out as a requirement for a Master of Arts in Psychology under the supervision of Dr Jacki Henderson who can be contacted at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) and Dr Dean Sutherland who can be contacted at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz). In addition to myself ([julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)), they will be pleased to discuss any concerns you may have about participation in the project.

This study has been reviewed and approved by the University of Canterbury Education Research Human Ethics Committee, and participants should address any complaints to The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch 8140, or email [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz).

If you agree to participate in this study, please complete the attached consent form and post it to me in the envelope provided by (30/09/16). Thank you for your consideration.

Sincerely,

Julie Cox

## Appendix G

Department of Psychology  
 64 3 364 2987 ex. 3404  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
 19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

## Information Sheet for Children

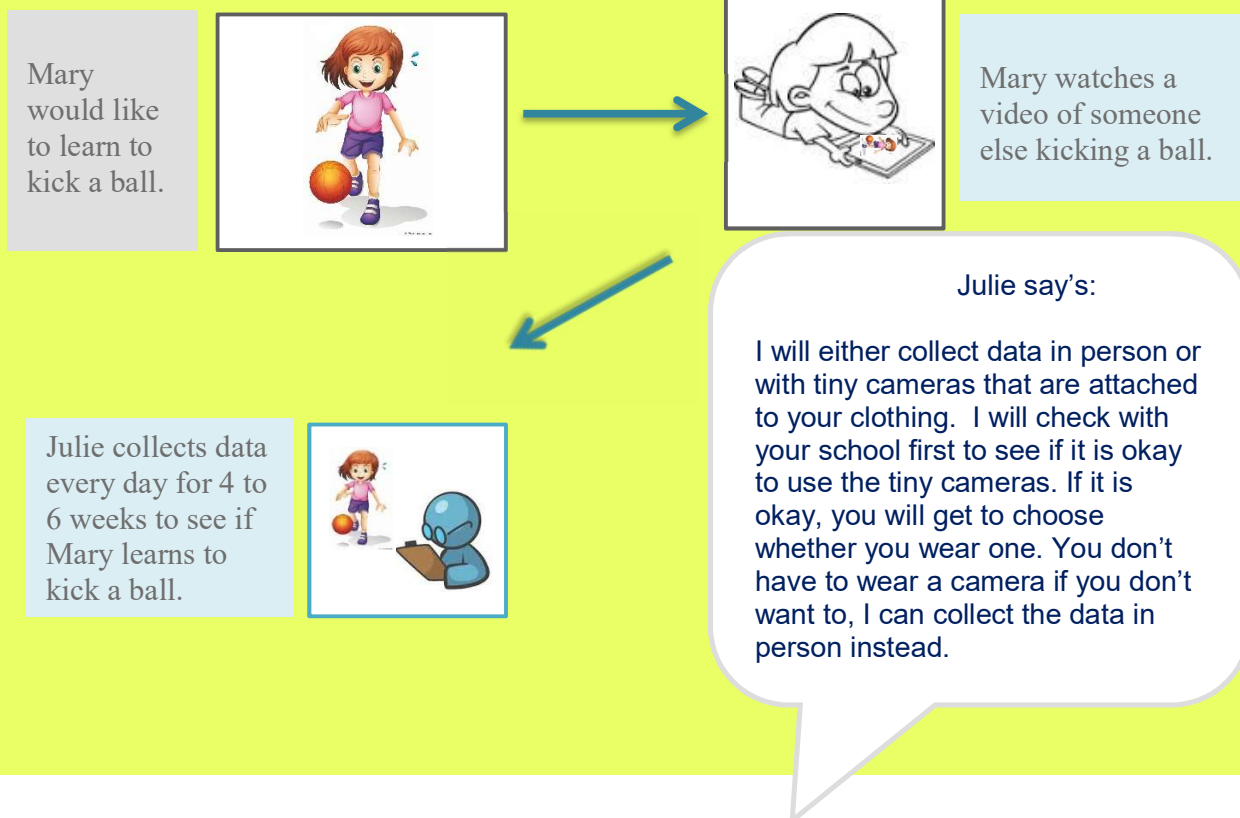
Hi, my name is Julie Cox. I'm a student at the University of Canterbury, and I'm studying video modelling and video self-modelling for teaching new skills to children at school.

### *What is a study?*

A study is when researchers, like myself, need to collect information to learn about a topic of interest. I would like to have 6 students in my study. If you choose to be considered for the study, I will talk to your parents/caregivers and teacher to

Video modelling is when we watch videos of others doing things we can't quite do on our own just yet. Video self-modelling is when we watch videos of ourselves doing things that we can't quite do on our own just yet.

Here is an example of how video modelling works.



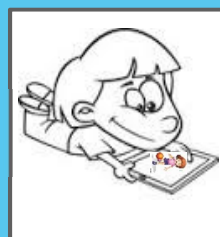
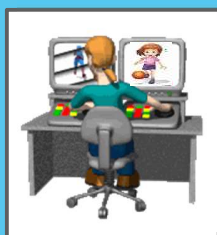
Here is an example of how video self-modelling works.

Mary would like to learn to kick a ball.



Julie will film Mary trying to kick a ball, it doesn't matter that Mary isn't able to do that yet.

Julie uses special technology to make a video that looks like Mary can kick a ball.



Mary then watches the video of herself kicking a ball.

Julie collects data every day for 4 to 6 weeks to see if Mary learns to kick a ball.



**We would like to invite you to be a part of a study to teach you a new skill using video modelling or video self-modelling.**

### *What will you have to do?*

If you take part in the study, you will be put in one of two groups; video modelling or video self-modeling.

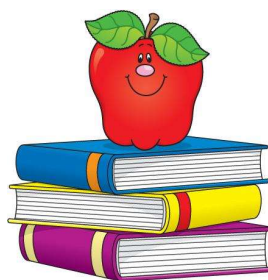
In the video modelling group you will watch a video of someone else doing something new. In the video self-modelling group you will be able to help the researcher make a 2-3 minute movie with you in it doing something new. This will take about 30 minutes a day for 3 days to make. The video will be seen by you and one other child that is in the video modelling group.

You will watch the video every day for 5 days. Julie will be with you when you do this.

Julie will be at your school every day for 4 to 6 weeks for up to 1 hour each time to collect data on a specific skill of yours.

### *Who will see the information you give us?*

The only people who will be able to see your information you give us is your parents/caregivers, teacher or teacher aid, and the people doing the research. If you make a video with Julie, the only people who will see the video will be your parents/caregivers, teacher or teacher aid, one other child and the people doing the research.



### *What are the benefits of being in this study?*

This study will help us understand more about using video modelling and video self-modelling to teach new skills.

If you would like, you can have a summary of the results at the end of the study

You will receive a \$20 Westfield voucher and a summary of the results at the end of the study.

You will also receive a copy of the video (either of yourself or your peer) on a USB stick. But I ask that no copies of this video are made, and it is not be put on the internet.

### *Questions*

If you have any questions you can talk to your parents, teachers or me. I will be visiting your school and home, where I can take all your questions. If you think of a question during the study you, your parents, or teachers can contact me.

### *Do I have to be in the study?*

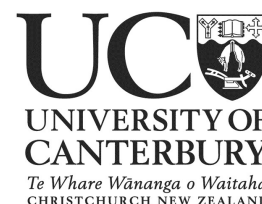
You don't have to be in the study if you don't want to be. If you choose not to be in the study just let your parents/caregivers, teachers, or I know. Most importantly, if you say *yes* to begin with and then change your mind later on, you can still pull out of the study. If you pull out, you will still get a \$20 Westfield voucher.





## Appendix H

Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



Video Self-Modelling for Improving Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Information Sheet for Adolescents

My name is Julie Cox and I am a postgraduate student from the University of Canterbury. I am studying the effects of video modelling and video self-modelling on adaptive behaviour in children and adolescents.

I am inviting you to participate in my study. I would like to have a phone conversation with your parents/caregivers to see if the study is right for you. If you are selected to take part in the study I would then meet with your parents/caregivers at your home or at the university to fill in a questionnaire about your abilities. I will then meet with your teacher to discuss your abilities at school.

If you take part in the study you will be in one of two groups; video modeling or video self-modeling. In the video modelling group you will watch a video of someone else doing something new. In the video self-modeling group you will be able to help the researcher make a 2-3 minute movie with you in it doing something new. This will take about 30 minutes each time over three days. The researcher will edit the footage from the movie and make a video that will be watched every day for five days by you and one other student that is in the video modelling group. I will be with you when you watch the video each day.

I will also be at your school every day for 4 to 6 weeks to collect data on a specific skill of yours. This will take up to 1 hour each day. This will be done either in person or using tiny cameras that are attached to your clothing. I will check with your school first to see if it is okay to use the tiny cameras. If it is okay, you will get to choose whether you wear one. If you do not want to wear a tiny camera, I can collect the data in person instead.

As a follow-up to this study, your parents/caregivers and teacher will be asked to complete a short questionnaire regarding what they thought about the study. At the end of the study, you will receive a \$20 Westfield voucher as an acknowledgement of your participation in the study.

The only people who will see the video made will be you, your parents/caregivers, myself, my two supervisors (Dr Jacki Henderson and Dr Dean Sutherland), and one other student. At the end of the study, you and one other adolescent will be given the video on a USB stick to watch whenever you like, but we ask that no copies of this video be made, and it is not put on the internet. If you choose to wear a tiny camera, the footage will only be seen by myself and my two supervisors.

During the project you will be given a code name, so that no one will know your name, your teacher's name, your parents/caregivers name or the school's name. Anything that has your details on it will be locked in my office in the Psychology department at the University of Canterbury. This information will be kept here for 5 years after the study is finished, after this, the information will be destroyed. A report of the study will be available to you once the study is finished. The finished project using code names will be put in the library at the University for other people to read. Others will not know who you are, where you live or where you go to school.

This study has also been reviewed and approved by the University of Canterbury Human Ethics Committee. If you have any questions about the research study you can ask your parent/caregiver, teacher or me. If you change your mind about being in the study, that's fine too, all you have to do is tell your parent/caregiver, teacher or me, and your information will be removed as long as it is possible. You will be able to see a summary of the results at the end of the study.

Thank you for thinking about being in my study.

Julie Cox

## Appendix I

Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Consent Form for the Principal

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what will be required of the students and teachers and I agree for this research project to take place at my school.

I understand that any information or opinions I provide will be kept confidential to the researcher, Dr Jacki Henderson, and Dr Dean Sutherland, and that any published or reported results will not identify the participants or their school. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form. Data may be stored up to five years.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the researcher Julie Cox at [julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz) on 364 2987 ex. 3404, or supervisors Dr Jacki Henderson at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) on 364 2987 ex. 3679, and Dr Dean Sutherland at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz) on 364 2987 ext. 7075 for further information. If I have any complaints, I can contact the supervisors or the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

By signing below, I agree for this research project to take place at my school. Please post this consent form to the researcher by (2/12/16) in the envelope provided, thank you.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Email address: \_\_\_\_\_

Tick box if you would like to receive a summary of the results ☐

**If you do not agree for your school to participate, please return all forms in their return envelope to the researcher.**

## Appendix J

Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Consent Form for the Chair of the Board of Trustees

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what will be required of the students and teachers and I agree for this research project to take place at my school.

I understand that any information or opinions I provide will be kept confidential to the researcher, Dr Jacki Henderson, and Dr Dean Sutherland, and that any published or reported results will not identify the participants or their school. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form. Data may be stored up to five years.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the researcher Julie Cox at [julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz) on 364 2987 ex. 3404, or supervisors Dr Jacki Henderson at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) on 364 2987 ex. 3679, and Dr Dean Sutherland at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz) on 364 2987 ext. 7075 for further information. If I have any complaints, I can contact the supervisors or the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

By signing below, I agree for this research project to take place at this school. Please post this consent form to the researcher by (30/09/16) in the envelope provided, thank you.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Tick box if you would like to receive a summary of the results ☐

**If you do not agree for your school to participate, please return all forms in their return envelope to the researcher.**

## Appendix K

Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Consent Form for Teachers

I have been given a full explanation of this project and have had the opportunity to ask questions. I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty. If I withdraw from participation this will include any information I have provided to be withdrawn should this remain achievable.

I understand that any information or opinions I provide will be kept confidential to the researcher, Dr Jacki Henderson, and Dr Dean Sutherland, and that any published or reported results will not identify the participants or their school. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form. Data may be stored up to five years.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the researcher Julie Cox at [julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz) on 364 2987 ex. 3404, or supervisors Dr Jacki Henderson at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) on 364 2987 ex. 3679, and Dr Dean Sutherland at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz) on 364 2987 ext. 7075 for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

By signing below, I agree to participate in the research project. Please post this consent form to the researcher by (30/09/16) in the envelope provided, thank you.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Email address: \_\_\_\_\_

Tick box if you would like to receive a summary of the results

**If you do not agree to participate please return all forms in their return envelope to the researcher.**

## Appendix L

Department of Psychology  
64 3 364 2987 ex. 3620  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



The effects of Video Modelling and Video Self-Modelling on Adaptive Behaviour in Children with Autism Spectrum Disorder.

### Consent Form for Parents/Caregivers

I have been given a full explanation of this project and have had the opportunity to ask questions. I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty. If I withdraw from participation this will include any information I have provided to be withdrawn should this remain achievable. I understand that at the completion of the study, my child will receive a \$20 Westfield voucher as an acknowledgement of their participation.

I understand that any information or opinions I provide will be kept confidential to the researcher, Dr Jacki Henderson, and Dr Dean Sutherland, and that any published or reported results will not identify the participants or their school. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form. Data may be stored up to five years. I understand that I am able to receive a report on the findings of the study by ticking the box at the bottom of this form.

I understand that I can contact the researcher Julie Cox at [julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz) on 364 2987 ex. 3404, or supervisors Dr Jacki Henderson at [jacki.henderson@canterbury.ac.nz](mailto:jacki.henderson@canterbury.ac.nz) on 364 2987 ex. 3679, and Dr Dean Sutherland at [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz) on 364 2987 ext. 7075 for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

By signing below, I agree to participate in the research project. Please post this consent form to the researcher by (30/09/16) in the envelope provided, thank you.

I.....(full name) hereby consent for myself and my child.....(full name) to take part in this study.

Signature.....Date.....

Contact Details:

Phone No: \_\_\_\_\_ Email: \_\_\_\_\_

Tick box if you would like to receive a summary of the results ☐

**If you do not agree for you or your child to participate please return all forms in their return envelope or to your child's teacher.**

**Appendix M**

Department of Psychology  
64 3 364 2987 ex. 3404  
[julie.cox@pg.canterbury.ac.nz](mailto:julie.cox@pg.canterbury.ac.nz)  
19/09/16



Video Self-Modelling for Improving Adaptive Behaviour in Children with Autism Spectrum Disorder.

## Assent Form for Children & Adolescents



### Sign the form only if you:

- ✓ Have understood what you will be doing in this study,
- ✓ Have had all your questions answered,
- ✓ Have talked to your parent(s) or caregiver(s) about this project, and
- ✓ Agree to take part in this study.

**Print your name here:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Day

Month

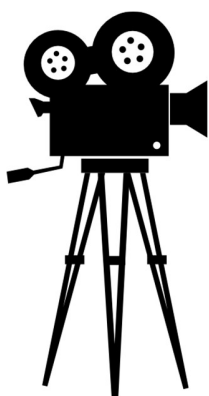
Year



**Tick box if you would**

**like to see the results**

Julie Cox





## Appendix N

### **Screening Interview for Parent**

Your Name:

Your relationship to the child:

Child's name:

Child's gender, please circle: M / F

Child's DOB:

Child's ethnicity:

Is your child able to attend (watch without looking or moving away) to a 2-4 minute video?

Please circle : Yes / No

What is your child's ASD diagnosis:

When was your child diagnosed with ASD:

Who diagnosed your child:

If known, what assessments/tools were used for diagnosis:

Does your child have any co-existing diagnoses:

Is your child currently on any medication:

Please provide information below regarding any specific difficulties your child faces within the school environment under the following categories:

Communication Skills (e.g., greeting others):

Daily Living Skills / Self Help Skills (e.g., preparing for the school day):

Socialization / Social Functioning / Interpersonal Skills (e.g., participating in group activities):

Motor Skills (e.g., tying shoe laces or jumping):

How does your child react to being asked to engage in these difficult activities:

How long have these behaviours occurred for:

Have any other methods been used to modify your child's behaviour in this situation? If so, what were they and what was the result:

Is there currently any other services involved in providing intervention for your child in (specific situation):

## Appendix O

### Observation Schedule

Session Date: \_\_\_\_\_ Session #: \_\_\_\_\_ Observer: Julie Participant: Luke

Experimental Condition (circle): Baseline Intervention Maintenance Maintenance (2 mth)

Observation Start Time (24hr): \_\_\_\_\_ Observation Stop Time: \_\_\_\_\_

Target Behaviour: Collecting the Mail

*Student given mail bag and cue from classroom teacher: "Can you go to the office, collect the mail, and bring it back to Jasmine please."*

Step #:	Event:	Time Limit:	Response:			Challenging Behaviour:					
1	Takes Mail Bag from Teacher	5 sec	C	I	OTP	MA	SD	Th	HH	S	HO
2	Leaves Classroom (1 and 2 can be reversed)	30 sec	C	I	OTP	MA	SD	Th	HH	S	HO
3	Leaves Main Building	30 sec	C	I	OTP	MA	SD	Th	HH	S	HO
4	Walks Directly to Office	180 sec	C	I	OTP	MA	SD	Th	HH	S	HO
5	Enters School Office	30 sec	C	I	OTP	MA	SD	Th	HH	S	HO
6	Approaches Office Administration Desk	30 sec	C	I	OTP	MA	SD	Th	HH	S	HO
7	Hands Over Mail Bag to Office Administrator	10 sec	C	I	OTP	MA	SD	Th	HH	S	HO
8	Takes Mail Bag from Office Administrator	5 sec	C	I	OTP	MA	SD	Th	HH	S	HO
9	Leaves Office	30 sec	C	I	OTP	MA	SD	Th	HH	S	HO
10	Walks Directly to Upland Unit	180 sec	C	I	OTP	MA	SD	Th	HH	S	HO
11	Enters Main Building	10 sec	C	I	OTP	MA	SD	Th	HH	S	HO
12	Walks directly to Jacinta's Office	20 sec	C	I	OTP	MA	SD	Th	HH	S	HO
13	Knocks on Jacinta's Door (or waits at door if open)	10 sec	C	I	OTP	MA	SD	Th	HH	S	HO
14	Hands Jacinta the Mail Bag (or takes out mail)	10 sec	C	I	OTP	MA	SD	Th	HH	S	HO
15	Takes Mail Bag from Jacinta (score correct if took out mail)	5 sec	C	I	OTP	MA	SD	Th	HH	S	HO
16	Walks Directly to Classroom	90 sec	C	I	OTP	MA	SD	Th	HH	S	HO
17	Puts Mail Bag Away (table or hook)	20 sec	C	I	OTP	MA	SD	Th	HH	S	HO
<b>Key:</b>											
C=Correct response, I=Inappropriate response, OTP=Over Time Pass											
MA=Moves Away, SD=Sits Down, Th=Throws Items, HH=Hits Head with Hands, S=Stares at Teacher/Researcher, HO=Hits Others											
										<b>TOTAL Correct:</b>	<b>/17</b>
										<b>Percentage Correct:</b>	<b>/100</b>

Notes:

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## Appendix P

### Observation Schedule

Session Date: \_\_\_\_\_ Session #: \_\_\_\_\_ Observer: Julie Participant: George

Experimental Condition (circle): Baseline Intervention Maintenance Maintenance (2mth)

Observation Start Time (24hr): \_\_\_\_\_ Observation Stop Time: \_\_\_\_\_

Target Behaviour: Cooperative Play with a Peer.

**Operational Definition:** Cooperative play is scored when the student is (a) within 1.5 metres of peer, (b) taking turns, (c) placing 'snap' cards in correct position, or (d) replacing 'memory' cards in correct position.

**Interval Schedule:** 5 minute period of 10 seconds observing followed by 10 seconds recording (total 15 x 10 sec intervals).

10-sec intervals	Response		Challenging Behaviour:
1	Yes	No	GU IC Th N H MA R
2	Yes	No	GU IC Th N H MA R
3	Yes	No	GU IC Th N H MA R
4	Yes	No	GU IC Th N H MA R
5	Yes	No	GU IC Th N H MA R
6	Yes	No	GU IC Th N H MA R
7	Yes	No	GU IC Th N H MA R
8	Yes	No	GU IC Th N H MA R
9	Yes	No	GU IC Th N H MA R
10	Yes	No	GU IC Th N H MA R
11	Yes	No	GU IC Th N H MA R
12	Yes	No	GU IC Th N H MA R
13	Yes	No	GU IC Th N H MA R
14	Yes	No	GU IC Th N H MA R
15	Yes	No	GU IC Th N H MA R
<b>Totals</b>			
<b>Percentage "Yes"</b>			
<b>Key:</b>			
Yes=engaged in cooperative play, No=not engaged in cooperative play			
GU=gives up, IC=inappropriate comment, Th=throws object, N=says "No",			
H=physically hurts others, MA=moves away, R=refuses task			

Notes:

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## Appendix Q

### **Informal Interview with Teacher**

#### **Background information regarding the student**

To your knowledge, has the child had any remedial help with school work in the last year? If yes, please specify:

Has the student ever been recognized as having special education needs in any of the following areas?

	Yes now	In the past, not now	No
Learning difficulties	1	2	0
Specific learning difficulties (e.g., Dyslexia)*	1	2	0
Emotional and behavioural difficulties	1	2	0
Speech and language difficulties	1	2	0
Sensory impairment (hearing)	1	2	0
Sensory impairment (visual)	1	2	0
Physical disabilities*	1	2	0
Medical conditions*	1	2	0
Developmental delay*	1	2	0
Other*	1	2	0

\*Please describe \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Does this student receive ORRs funding?

Does the student have any of the following, RTLB, IEP, Teacher Aide (please give details i.e., hours per week/subjects)?

Is the child receiving any additional support services at school (either individually or in a group)?

	Yes	No
Reading Recovery or similar special reading or literacy programme	1	0
Perceptual Motor programme	1	0
Teacher aide	1	0
Behaviour Management Programme	1	0
Occupational Therapy/Physio	1	0
Social Skills Programme	1	0
Speech and Language Therapy	1	0
Any other support. Please specify (i.e., language support, ESOL).....	1	0

Questions regarding the student's abilities when engaging, attempting to engage in, or being asked to engage in the target behavior

How does the child's current ability in (specific situation) impact on their school life? :

How does the child's current ability in (specific situation) affect others around them? :

Have any other methods been used to change the child's behaviour in (specific situation)? If so, what were they and what was the result? (This can include school support programmes, special education provisions, specific interventions, or any steps you or the child's teacher aide have taken yourself):

Describe the last time the child was asked to engage in (specific situation), how did they respond? :

Questions regarding the student's resistance to engaging, attempting to engage in, or being asked to engage in the target behavior

How intense would you say the child's behaviour is in (specific situation)? :

How long does this behaviour last? :

When and where does this behaviour occur? :

What happens after the behaviour occurs, and what do you do? :

What goals do you have for the child in (specific situation)? :

## Appendix R

### Follow-up Questionnaire – Teacher

Please answer these questions honestly. Your answers will remain anonymous and will only be seen by my supervisors and myself. Please read each statement carefully and tick one answer only for each question.

#### Social Validity

Q1. (Insert adaptive behaviour) is an important skill for children with Autism Spectrum Disorder.

☐ — ☐ — ☐ — ☐ — ☐  
 Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Q2. The student gained sufficient skills to improve (insert adaptive behaviour) by taking part in the study.

☐ — ☐ — ☐ — ☐ — ☐  
 Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Q3. I am satisfied with the skills taught in the present study.

☐ — ☐ — ☐ — ☐ — ☐  
 Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Q4. The implementation of treatment caused disruption to the classroom routine.

☐ — ☐ — ☐ — ☐ — ☐  
 Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Q5. The implementation of treatment was distracting to other students.

☐ — ☐ — ☐ — ☐ — ☐  
 Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Q6. The student's confidence with (insert adaptive behaviour) has improved as a result of participating the study.

☐ — ☐ — ☐ — ☐ — ☐

Strongly  
Disagree

Disagree

Neutral

Agree

Strongly  
Agree

Q7. I would recommend the video modeling or video self-modelling method as an effective way to teach young people with Autism Spectrum Disorder.

☐ — ☐ — ☐ — ☐ — ☐

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Q8. I would consider creating these videos myself in the future.

☐ — ☐ — ☐ — ☐ — ☐

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

### **Generalisation**

Q1. Have the skills learnt from the video modelling or video-self modelling generalised to any other situations?

☐      ☐  
 Yes      No

If you answered yes or maybe, please list situations here: \_\_\_\_\_

Q2. Have the skills learnt from the video modelling or video-self modelling generalised to any other settings?

☐      ☐  
 Yes      No

If you answered yes or maybe, please list settings here: \_\_\_\_\_

If applicable Q3. Have the skills learnt from the video modelling or video-self modelling generalised to any other persons?

☐      ☐  
 Yes      No

If you answered yes or maybe, please list people here: \_\_\_\_\_

Thank you for taking the time to answer this questionnaire.

**Appendix S**

Table 7

*Percentage of Correct Responses per Baseline Observation Session for Isaac and Scott*

Student	Session 1 (%)	Session 2 (%)	Session 3 (%)	Session 4 (%)
Isaac	07.00 (0.4 CB)	86.00 (0.33 CB)	07.00 (0.5 CB)	60.00 (0.4 CB)
Scott	100.00 (0.2 CB)	93.00 (0.2 CB)	00.00 (1.25 CB)	N/A

*Note.* CB = mean number of challenging behaviours per interval



## Appendix T

